

Student says Thunderbird will help 'turn me around'

BY JIMMIE TRAMEL

Tulsa World
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PRYOR — Robert Clemmons, 16, has already lost both of his parents.

He was 8 when his mother died in a car accident. He said his father died three years later.

"I've been house to house ever since," Clemmons said.

Stability, or at least 22 weeks' worth of it, is within his grasp.

Instead of attending classes this semester with fellow sophomores at Rush Springs High School, Clemmons is more than 200 miles away. He's living out of a duffel bag in a barracks, surrounded by strangers instead of his friends, because he wants to change his life.

Clemmons was among 143 boys and girls ages 16 to 18 who reported for processing Jan. 15 at Thunderbird Youth Academy in Pryor.

Thunderbird Youth Academy?

Isn't that where the bad kids go?

Director John Altebaumer hears that all the time. And, when he does, he shifts into perception-busting mode. He said Thunderbird doesn't have "bad kids."

Are there kids at the academy who have encountered issues at past schools or are dealing with personal challenges? Sure. But Altebaumer said kids are not sent to Thunderbird by the court system.

Not all of Thunderbird's kids are troubled. Some are "legacy" students whose families value the Thunderbird experience so much they keep sending relatives. But, for those kids who are troubled, the goal is for Thunderbird to give them the discipline and tools they need to tackle life when they return home.

Twice-a-year sessions last 22 weeks. The Tulsa World was granted campus access for a series of stories that will appear during the current session, which is scheduled to conclude with a June 17 graduation ceremony. The intent of the series is to "put a face" on Thunderbird Youth Academy, a military school which is part of the National Guard Youth Challenge Program.

Clemmons is among the "faces." He said he posted failing grades in high school last semester and has been getting into trouble. He said it wasn't "big trouble," but his stumbles made him realize he was headed down the wrong path.

"I want to make something out of myself," he said. "What I want to do is I want to go to college and play football, but I know I can't do that if my grades aren't good. And I can't do that if I keep on getting in trouble. I have been kicked out of a lot of houses, and I kept on hurting people in the process of me doing stuff I knew was wrong. I don't want to do that anymore."

I believe in him

Processing day is an emotional one at Thunderbird Youth Academy. There were hugs, tears and follow-up hugs in a designated area where parents said goodbye to their children.

If kids gut it out and stick around, they won't see their mothers and fathers until about seven weeks have passed.

Are students permitted to quit? Yes. "But usually the parents don't let them," Altebaumer said.

Because Thunderbird Youth Academy is the only academy of its kind in Oklahoma, parents from all over the state drove their children to Pryor for the current session.



James Heston, right, says goodbye to Robert Clemmons, 17, while dropping him off at Thunderbird Youth Academy. Heston is Clemmons' guardian, and the two live in Rush Springs. (PHOTO BY MIKE SMITH, TULSA WORLD)



Robert Clemmons has his hair cut. (PHOTO BY MIKE SMITH, TULSA WORLD)

James Heston transported the parentless Clemmons to the academy.

Heston has known the teen for about two years. The relationship was forged because Heston's son and Clemmons are sports teammates. Heston became Clemmons' guardian only three weeks before shepherding him to Thunderbird. Heston is in the Oklahoma Army National Guard and knew about the academy's program and benefits.

Clemmons was receptive when Heston pitched Thunderbird to him.

Asked if Clemmons is a good kid, Heston said, "Yes. I believe in him. I strongly do. That's part of Robert's problem. He has had a lot of people try to help him out and they stopped believing in him. He's a teenager. He makes teenage mistakes. Robert is willing to try to correct some of those past mistakes and move forward."

After the hugs ended, parents and guardians were taken to a room where they wrote letters to be given to their children the following day. Phone calls are a no-no for the first two weeks of the program. Letters are the only form of communication between parents and students.

"Just because (the kids) don't write you back doesn't mean they don't very much enjoy the letters they are receiving, because every night they sit down and read letters," counselor Jeanne Cole told students' families. "Some of them, it's just so awkward for them to write. They are writers."

Meanwhile, the director chose parting words meant to put families at ease.

"I understand what you are feeling right now," Altebaumer said. "You're going, 'I just turned my child over to a bunch of people and I have no idea who they are.' I understand that. Understand that the program has been going for 24 years. We've got an idea of what we are doing."

Altebaumer told the parents he knows they

just endured a significant emotional moment. And, speaking of significant emotional moments, their children were being treated to a different kind of emotional moment in a building across the street.

"They are getting introduced to the military lifestyle," Altebaumer said.

Whole new world

The first two weeks at the academy are like basic training. Classes don't begin until basic training is completed.

"We put them in a very, very structured environment," Altebaumer said. "They will learn how to live a military life." A typical day once classes begin: Wake up at 5 a.m. Physical fitness training for 45 minutes to an hour. Breakfast. Barracks maintenance. Classes from 8 a.m. to noon. Lunch (no speaking in the dining facility; you're there to eat, not chat). Classes from 1-3 p.m. More physical fitness training. Dinner. Evening activities (tech school and church are among options). Bedtime is 9 p.m.

While on campus, there are no cellphones, no televisions, no radios and no money (it just causes problems). Students are restricted to campus unless granted a pass.

Ready or not, students immediately enter a whole new world. After detaching from parents, they are told to line up against a wall. Leaning on the wall will get you scolded. Small groups of students are marched single file — eyes straight ahead, no talking — to a building where they are issued a duffel bag of Thunderbird apparel.

There is no need for "divilian" clothes here. New students go through a "shakedown" inspection. Translated, they dump their personal belongings onto the floor so Thunderbird staffers can confiscate unapproved items and send the items home with parents. Clemmons got to keep sheets of paper with phone numbers and addresses. He didn't like giving up his necklace

with a gold cross. It was a gift from his grandmother.

The necklace wasn't the only thing Clemmons temporarily lost.

Clemmons lost his name. "You no longer have first names," a sergeant told students. "Your name is candidate now." (Candidates can graduate to cadet after two weeks.)

And Clemmons, like other male students, lost his hair.

After changing into Thunderbird gear, candidates waited in a hallway for a turn in Bridget McCoy's barber chair.

"Look down for me," she said, using a zero clipper to shear off clumps of hair.

Zero clipper?

"There is one shorter," she said. "But one shorter is kind of bald."

Some students (about 20 in nine years, according to a Thunderbird staffer) balk at getting their hair cut. McCoy doesn't get involved in persuasion. She leaves that to others.

Candidates were urged to read cadet handbooks while waiting for haircuts and other first-day occurrences. Things are probably going to go well for

those who actually read the handbook, and things are probably not going to go well for those who just look at the pages.

Among those who escorted candidates to their first taste of military life was dad-in-fatigue Kendall Nohling, 25.

Nohling is a 2010 Thunderbird graduate. The academy was a life-changer for him.

"I wouldn't say I was a bad kid, but I was definitely a brat," he said. "It just opened up my eyes to a different world. I got recruited out of here and joined the National Guard."

Thunderbird does not funnel students into the military, but many graduates enter the military. Nohling met his wife,

Ximena, when they were Thunderbird students. Now they have four children. He was serving in Afghanistan when his first child was born. He watched the birth on Skype.

Doing what's best

Light mist was in the air as Clemmons and other male candidates stood outside Sanford Hall. They read cadet handbooks as fellow candidates took turns going inside to be issued boots.

Not everyone who was handed boots will take every step.

Altebaumer said Thunderbird has a 70 to 75 percent retention rate. Sessions start with 150 students selected through a screening process. Usually, between 110 and 120 graduate.

"It's just like the military," he said. "Some people just aren't made for this type of environment. And we have to accept that fact."

Said Deputy Director Chris Stout: "If we can get them through the next two weeks, they typically stick it out."

Clemmons was nervous before beginning the program. Asked what he will miss, he said, "I'm probably going to miss ice cream. That's the only sweets I eat. I'm probably going to miss sports a little bit. I will miss track season, and my girlfriend. But this is what's best for me and I have to get it done."

Clemmons expressed confidence that he can complete the program. He said he likes competition. This is sort of a competition, but the stakes are higher than a sporting event.

"This," Clemmons said, "is going to turn me around." One week down, 21 to go.



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U.S. Fish and Wildlife Service

Draft Environmental Impact Statement

American Electric Power Habitat Conservation Plan

U.S. Fish and Wildlife Service to Host Public Scoping Meetings for the American Electric Power Habitat Conservation Plan Environmental Impact Statement

The American Electric Power (AEP) company is preparing a Habitat Conservation Plan (HCP) and intends to apply for an Incidental Take Permit (ITP) under the Endangered Species Act. The ITP is needed to cover incidental take of the endangered American burying beetle from activities associated with construction, operation, and/or maintenance of electrical transmission and distribution lines or other associated infrastructure in parts of Oklahoma, Arkansas, and Texas.

The U.S. Fish and Wildlife Service (Service) intends to prepare an Environmental Impact Statement (EIS) to evaluate the impacts of alternatives relating to the proposed issuance of the ITP and has initiated the public scoping process. A primary purpose of the scoping process is to engage federal, tribal, state and local governments and the public in the identification of issues and concerns, potential impacts, and possible alternatives to the proposed action (issuance of the ITP).

Public Scoping Meetings

The Service will host four public scoping meetings within the proposed covered area. The public scoping meetings will provide the public with an opportunity to ask questions and discuss issues with Service staff regarding the EIS and provide written comments. Public scoping meetings will be held at the following dates and locations:

Monday, February 6, 2017

5:30 - 7:30 p.m.
Eastern Oklahoma State College
McAlester Campus
Conference Center
1802 E College Avenue
McAlester, OK 74501

Wednesday, February 8, 2017

5:30 - 7:30 p.m.
River Park Events Building
West Room
121 Riverfront Drive
Fort Smith, AR 72801

Tuesday, February 7, 2017

5:30 - 7:30 p.m.
Tulsa/Kiana College
Tulsa Area Model Student Center
Lavi Hall Conference Room
2500 North Robinson Road
Tulsa, OK 74599

Thursday, February 9, 2017

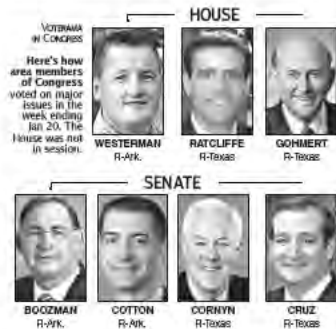
5:30 - 7:30 p.m.
Central Center
Auditorium
1026 East 8th Street
Tulsa, OK 74120

The public scoping meetings will be held in an open house format with a brief presentation at approximately 6:00 p.m. After the presentation, the open house will resume.

The Service will accept written comments at each meeting. Comments can also be submitted by email to OKES_HCP_EIS@fws.gov or mailed to Field Supervisor, Oklahoma Ecological Services Field Office, U.S. Fish and Wildlife Service, 9014 E. 21st St., Tulsa, OK 74128. Please specify that your information request or comments concern the AEP draft EIS/HCP. Scoping comments are due by February 21, 2017.

For more information, please visit www.fws.gov/southwest/es/Oklahoma/.

COMMISSIONERS' MEETING



SENATE
JAMES MADDOX, SECRETARY OF DEFENSE:
The Senate on Jan. 20 voted, 58 for and one against, to confirm retired Marine Gen. James N. Maddox, 66, as the 26th secretary of defense since the office was established in 1947. When Maddox retired from active duty in 2013, he was commander of the U.S. Central Command, which is direct American military operations in the Middle East, North Africa and Central Asia. Maddox became the first member of President Donald Trump's cabinet to receive confirmation. The negative vote was cast by Sen. Kirsten Gillibrand, D-N.Y.
A yes vote was to confirm Maddox to head the Department of Defense.
ARKANSAS
Voting yes: Tom Cotton, R-John Bozeman, R-Texas
Voting yes: John Cornyn, R-Texas
JOHN KELLY, HOMELAND

SECURITY SECRETARY:
The Senate on Jan. 20 voted, 80 for and 11 against, to confirm retired Marine Gen. John F. Kelly as the fifth secretary of homeland security since the department was established in 2002. Kelly, 46, was commander of the U.S. Southern Command (spanning South and Central America and most of the Caribbean) when he retired in January 2015. He is the highest ranking military official to have lost a child in Iraq or Afghanistan; his son, Marine 1st Lt. Robert Kelly, died in combat in Afghanistan in November 2010.
A yes vote was to confirm Kelly to head the Department of Homeland Security.
ARKANSAS
Voting yes: Cotton, Bozeman, Texas
Voting yes: Cornyn, Cruz
KEY VOTES AHEAD
In the week of January 23, the Senate will conduct confirmation votes on Trump Administration cabinet nominees. The House schedule was to be announced.

Bowie County looks at making buildings more energy efficient

NEW BOSTON, TEXAS—Making Bowie County-owned buildings more energy efficient will be one of the topics discussed at the Commissioners Court meeting at 10 a.m. today.
Commissioners will consider hiring the Cavellian, Texas-based Trans Company to conduct an energy efficiency study on the county's buildings in order to help the county save money with improved energy efficiency. Besides energy efficiency

ON THE RECORD

CIVIL COURT
Bowie County
Dealers Credit Express Inc. vs. Texas Price Motors LLC, default: TD Bank USA vs. Everaize Jackson, default: Discover Bank vs. Justin C. Young, default.
Miller County
Village Park South vs. Greshika Merritt, untoward defendant.
PROBATE COURT
Bowie County
Juanita Frances McMillan, applies to probate will and for issuance of letters testamentary of the estate of Wesley Boyce McMillan.
Miller County
No items reported.
COURT OF APPEALS
6TH JUDICIAL DISTRICT
OPINIONS RENDERED
Ricki J. Shugart v. David Thompson, a.k.a. "Lost Agent," a.k.a. "Agents" and Unknown Deputies, a.k.a. "Agents" Each in Their Individual and Official Capacities, Sheriff's Department of Fannin County, Appeal from 33rd District Court (Fannin) Judgment of the trial court affirmed, reversed and remanded to trial court; William R. and Susan M. Knoderer v. State Farm Lloyds, Penta Perkins, and Tom Roberts, Appeal from 35th District Court (Hunt) Judgment of the trial court modified and as modified, affirmed.

MARRIAGE LICENSES GRANTED
Bowie County
Robert Clinton Beavers and Maria Lynn Ward, Texarkana, Texas; Sascha Michael Anglin and Angela Nicole Robertson, Texarkana, Texas; Johnathan Ray Trustey and Jessica Nichelle Kessler, Texarkana, Ark.; Richard Aubrey Slaughter II and Nannette E. Sloan, St. Petersburg, Fla.; Demetric Dewayne Martin and Brandi Alexis Huntley, Bowie Rock; Donald Ray Motherhead Jr. and Jessica Diane Thomas, Texarkana, Texas; Daniel Lee Markham and

The Way It Was: Ground broken for new church

These were some of the stories reported by the Texarkana Gazette this week in January.

100 years ago

JAN. 23, 1917: TWO BIG LEAGUE PLAYERS VISITORS TO TEXARKANA
There were two noted baseball stars visiting in Texarkana yesterday, and while here they were the center of attention. They were Clyde Milan, outfielder of the Washington, D.C., American League club, and Hub Northern, outfielder of the Houston, Texas, League team. Both boys are well known in Texarkana, both having played league ball on the Texarkana diamond.

JAN. 24: HONEY IS BEES' WINTER FOOD
The wise bee knows winter will come, and makes provision for it. Nectar is the normal food of the bees, honey an "emergency ration" manufactured from it in as concentrated a form as possible. Nectar consists of 70 per cent of water, and the rest cane sugar and flavoring matter. In honey, on the other hand, there is 7 to 10 percent of water, and the cane sugar, by process of digestion.

JAN. 25: CHARGED WITH BOOTLEGGING
Sidney Wright was given a trial before Justice Lynch Carpenter yesterday on a charge of violating the local option law and was held to await the action of the Bowie county grand jury under \$300 bond. Also three women were also charged with bootlegging: L. Smith, S. Davenport and M. Green, who reside on Cedar Street between fourth and fifth.

JAN. 26: LIGHTING CIGAR SET GASOLINE FIRE
Jacob Ballard, an oil wagon driver, lighted his cigar in a confectionary store in the business district here today. His gas oil "soaked" clothes ignited. Ballard ran through the building and out into the street where a soldier knocked him senseless and put out the flames. Ballard is believed to be in bad condition in a hospital here tonight.

JAN. 27: MARRIAGE LICENSES WERE ISSUED TO THREE COUPLES
County Clerk Fletcher Eason issued the following marriage licenses yesterday: Albert Sneed to Miss Anna Griffin, of Cass County; Lake Hale and Miss Edna Moore of Miller County.

JAN. 28: TEXARKANA TELEPHONE COMPANY WILL INSTALL UNDER GROUND
While the streets of the Arkansas side are being torn up for the big paving district, the Texarkana Telephone Co. will take advantage of the time and put in a considerable amount of work. Under the plans as laid out, an eight-way duct conduit system will be put in from the central office to eight streets, which will be the main arteries of supply for all of Texarkana.

JAN. 29: MATERIAL ARRIVING FOR PAVING SPRUCE STREET
The brick for paving Spruce Street from Front to Broad Street has begun to arrive, and was being placed on the street yesterday. Front Street between State Street and State Line Avenue in front of the Cosmopolitan Hotel, has been placed on the ground, paving will be completed within the next few weeks.

JAN. 23, 1917: TO SERVE AS PAGE
The Houston Astros have been selected to serve as a page in the Arkansas General Assembly this week in Little Rock. This opportunity is made available to the local school showing outstanding ability in American government and civics. A senior Honor Society member for the Mott Harold Musley chapter of the Future Teachers of America, and a member of the Xinos, the youth affiliate of the nation at seniority of Phi Delta Kappa.

JAN. 24: ASTROS GROUP WILL VISIT IN TWIN CITIES
The Houston Astros will go into orbit this Wednesday. In orbit around the state west spreading goodwill on a 17 city, 2,400 mile journey throughout Texas and Louisiana. The 17 city tour will last the eight day journey will be Victoria, Corpus Christi, Weslaco, San Antonio, Austin, Lufkin, Waco, Dallas

Ft. Worth, Beaumont and Texarkana, and Shreveport, Alexandria, New Orleans, Baton Rouge, Lafayette and Lake Charles, La.

JAN. 26: SUSPECT ARRESTED IN ROBBERY OF FILLING STATION
A 20 year old was arrested in connection with the Monday robbery of the Rose Oil Service station at Seventh and Texas Avenue. The man walked into the office, pulled a .22 caliber pistol from his pocket and ordered Dan McCain, manager of the station, to open the safe. McCain said the man took \$178 from the cash register, told him to lie down on the floor and tied J.R. Chestnut was taken into custody just 24 hours after the robbery by Sgt. Ira Scott.

JAN. 27: GROUND BROKEN FOR NEW CHURCH
Groundbreaking ceremonies were held at the site of the new Pleasant Grove Christian Church with the pastor, the Rev. Louis Faust. The new church is expected to be completed by early spring. The Pleasant Grove Christian Church was organized in 1922 with about 20 members on the roll. The church now has 130 members on the roll. Three charter members, Mrs. C.D. Allen, Miss Allen and Mrs. William Phiberton, were present for the groundbreaking ceremonies.

JAN. 28: NAVY MOTHERS WILL MARCH OF DIMES BOOTH
The March of Dimes Booth at Broad and Stateline will be manned today by members of the Navy and Marines Mothers Club No. 888. Mrs. Lela Lumpkin, commander, if the weather is not wet and cold. Members will work in other areas of town to raise funds, working in addition to Mrs. Lumpkin will be Mrs. Beatrice Hines, Mrs. Marnie Martin, Mrs. Maud Freeman, Mrs. Martin Ashley, Mrs. G.A. McAllister, Mrs. Esther Simer, Mrs. Merlene Simer, Mrs. Cora Patten and Mrs. Annie Adams. "The ladies have not been urged to work in the street campaign now, when these wonderful ladies asked to help, how we could refuse them?" asked Mr. Kares, chairman for the March of Dimes.

JAN. 28: HEADS COUNCIL
Charlotte Smith, a junior at Dunbar High School, was elected president of the East Texas District Association of Student Councils at recent district meeting in Woodville, Texas. Charlotte, daughter of Mr. and Mrs. Lee A. Smith, is a member of the Student Council, F.A.A., T.H.I.Y., Top Teens of Distinction, Kiwanis and Union Hill Baptist Church.

Police: Don't leave purses or wallets unattended

The Texarkana, Texas, Police Department is reminding residents to be careful and not leave purses and wallets unattended in shopping carts and at workplaces. During the last few months, especially during the holiday season, police have also noticed a surge in fraud stemming from both credit and debit cards being stolen and used. Presently, criminals are working in small groups to distract employees at business workplaces, then gain access to back rooms or offices where purses or wallets may be kept in drawers or under desks. Customers are also being distracted while shopping, which allows criminal accomplices to grab wallets from open, unattended purses in shopping carts. Police encourage shoppers to carry only the debit and credit cards they need and never carry Social Security cards. For more information, call Sgt. Geoffrey Lewis at 502-798-3113.

TexAmericas looks to finalize natural gas pipeline deal

TexAmericas Center board members are looking at finalizing an agreement during their 12:30 a.m. meeting Tuesday that will provide for having 15,000 feet of natural gas pipeline installed for a business tenant. The board, which will meet inside the Nash Commercial Training Center, will be looking at hiring the Costa Mesa, Calif.-based Nantitas Utility Co. to install the natural gas pipeline system for the Excal USA energy firm (an explosives reuse manufacturing firm).

In other business, board members will consider hiring the Olsson Associates Engineering firm to conduct both engineering and technical service in order to aid the center in developing a master plan for its old campus. The board will also consider allowing the Brooks, Texas, Youth Sports Association to use a baseball and softball field located near the main gate of the former Lone Star Army Ammunition Plant.

Strong winds leave many Houston-area homes without power

HOUSTON—Windy weather has left thousands of homes in the Houston area without electricity as strong gusts have knocked down power lines. That figure continued to steadily drop throughout the day as work crews fixed downed power lines. **THE ASSOCIATED PRESS**

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U.S. Fish and Wildlife Service
Draft Environmental Impact Statement
American Electric Power Habitat Conservation Plan

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The American Electric Power (AEP) company is preparing a Habitat Conservation Plan (HCP) and intends to apply for an Incidental Take Permit (ITP) under the Endangered Species Act. The ITP is needed to cover incidental take of the endangered American burying beetle from activities associated with construction, operation, and/or maintenance of electrical transmission and distribution lines or other associated infrastructure in parts of Oklahoma, Arkansas, and Texas.

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Wednesday, February 8, 2017	Thursday, February 9, 2017
5:30 - 7:30 p.m. River Park Events Building West Room 121 Riverfront Drive Fort Smith, AR 72901	5:30 - 7:30 p.m. Central Center Auditorium 1008 Oak 8th Street Tulsa, OK 74120

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For more information, please visit www.fws.gov/southwest/es/oklahoma/.

DATELINES



People cheer as ECOWAS Senegalese troops take position outside the state house in the Gambian capital Banjul on Sunday, one day after Gambia's defeated leader Yahya Jammeh went into exile. **STORME DELAV** / Associated Press

Gambia's ex-leader made off with millions

Exiled leader empties coffers, ships luxury cars out of capital before taking exile

ASSOCIATED PRESS

BANJUL, Gambia — Exiled Gambian ruler Yahya Jammeh stole millions of dollars in his final weeks in power, plundering the state coffers and shipping out luxury vehicles by cargo plane, a special adviser for the new president said Sunday.

Meanwhile, a regional military force rolled in, greeted by cheers, to secure this tiny West African nation so that democratically elected President Adama Barrow could return home. He remained in neighboring Senegal, where he took the oath of office Thursday because of concerns for his safety.

At a press conference in the Senegalese capital, Barrow's special adviser Mal Ahmad Fatty told journalists that the president "will return home as soon as possible."

Underlining the challenges facing the new

administration, Fatty confirmed that Jammeh made off with more than \$11.4 million during a two-week period alone. That is only what they have discovered so far since Jammeh and his family took an offer of exile after more than 22 years in power and departed late Saturday.

"The Gambia is in financial distress. The coffers are virtually empty. That is a state of fact," Fatty said. "It has been confirmed by technicians in the ministry of finance and the Central Bank of the Gambia."

Fatty also confirmed that a Chadian cargo plane had transported luxury goods out of the country on Jammeh's behalf in his final hours in power, including an unknown number of vehicles.

Fatty said officials at the Gambia airport have been ordered not to allow any of Jammeh's belongings to leave. Separately, it appeared that some of his goods remained in Guinea, where Jammeh and his closest allies stopped on their flight into exile.

NEWS BRIEFS

1 dead, multiple injured in San Antonio mall shooting

SAN ANTONIO — A robbery inside a San Antonio shopping mall ended with shots fired on Sunday, leaving one person who tried to intervene dead, three others shot and another two people taken to hospital with non-shooting injuries, police and fire officials said.

Police Chief William McManus said two suspects robbed a jewelry store at the Rolling Oaks Mall on Sunday. After the suspects fled the store, the man, described by McManus as a "good Samaritan" tried to stop the two men.

One of the robbers then fatally shot the man, McManus said.

Russia to decriminalize some domestic violence

MOSCOW — In Russia, giving one's spouse a slap is nothing extraordinary for many people. This week, the Russian parliament is expected to take a step closer toward decriminalizing it altogether.

In a bid to appeal to conservative voters, deputies in the lower house of parliament have given initial approval to a bill eliminating criminal liability for domestic violence that stops short of serious bodily harm or rape.

Alleged al-Qaida members killed in drone strikes

SANAA, Yemen — Suspected U.S. drone strikes

have killed three alleged al-Qaida operatives in Yemen's southwestern Bayda province, security and tribal officials said, the first such killings in the country since Donald Trump assumed the U.S. presidency Friday.

The two Saturday strikes killed Abu Anis al-Abi, an area field commander, and two others, they said, speaking on condition of anonymity as they were not authorized to release the information to journalists.

From wire reports

Where headlines are made around the world



Jeff Bullard sits in what used to be the foyer of his home as his daughter, Jenny Bullard, looks through debris at their home that was damaged by a tornado on Sunday in Adel, Georgia. Gov. Nathan Deal declared a state of emergency in several counties, including Cook, that have suffered deaths, injuries and severe damage from weekend storms. **BRANDEN CAMPBELL**

Toll from Southeast tornadoes now 18

Storms across Georgia leave 14 dead, adding to Saturday's toll of 4

ASSOCIATED PRESS

ADEL, Ga. — A severe storm system that spun off apparent tornadoes and left scattered destruction around the Southeast has claimed at least 18 lives on a two-day sweep across the region, authorities said.

The enormous system put millions of people in the South on edge during a weekend of violent weather that left crumpled trailer homes, downed trees and other damage in the hardest-hit communities from Mississippi to Georgia. The severe weather threat was still continuing Sunday night in some parts, extending into the Carolinas and

north Florida.

At least 14 people were killed Sunday in Georgia as the fast-moving storms tore across the state throughout the day, with at least one deadly tornado reported before dawn and violent storms still rumbling after nightfall. Four people were killed Saturday in Mississippi when the system began its deadly assault.

"There are houses just demolished," said Norma

Ford, who rushed out with other relatives Sunday evening after hearing a reported twister had overturned her nephew's mobile home in the southwestern Georgia city of Albany, the region's largest city with some 76,000 residents.

The day's deadliest toll came before daybreak Sunday when an apparent tornado blew through a mobile home park in south Georgia — about 60 miles southeast of Albany — shearing away siding, upending homes and killing seven people.

Coroner Tim Purvis of south Georgia's Cook County confirmed that seven people died at the mobile home park, where about roughly half of the 40 homes were "leveled."

The other deaths in Georgia were reported elsewhere.

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U.S. Fish and Wildlife Service to Host Public Scoping Meetings for the American Electric Power Habitat Conservation Plan Environmental Impact Statement

The American Electric Power (AEP) company is preparing a Habitat Conservation Plan (HCP) and intends to apply for an Incidental Take Permit (ITP) under the Endangered Species Act. The ITP is needed to cover incidental take of the endangered American burying beetle from activities associated with construction, operation, and/or maintenance of electrical transmission and distribution lines or other associated infrastructure in parts of Oklahoma, Arkansas, and Texas.

The U.S. Fish and Wildlife Service (Service) intends to prepare an Environmental Impact Statement (EIS) to evaluate the impacts of alternatives relating to the proposed issuance of the ITP and has initiated the public scoping process. A primary purpose of the scoping process is to engage federal, tribal, state and local governments and the public in the identification of issues and concerns, potential impacts, and possible alternatives to the proposed action (issuance of the ITP).

Public Scoping Meetings

The Service will host four public scoping meetings within the proposed covered area. The public scoping meetings will provide the public with an opportunity to ask questions and discuss issues with Service staff regarding the EIS and provide written comments. Public scoping meetings will be held at the following dates and locations.

Monday, February 6, 2017

5:30 – 7:30 p.m.
Eastern Oklahoma State College
McAlester Campus
Conference Center
1802 E College Avenue
McAlester, OK 74501

Wednesday, February 8, 2017

5:30 – 7:30 p.m.
River Park Events Building
West Room
121 Riverfront Drive
Fort Smith, AR 72801

Tuesday, February 7, 2017

5:30 – 7:30 p.m.
Texarkana College
Truman Arnold Student Center
Levi Hall Conference Room
2500 North Robison Road
Texarkana, TX 75589

Thursday, February 9, 2017

5:30 – 7:30 p.m.
Central Center
Auditorium
1028 East 8th Street
Tulsa, OK 74120

The public scoping meetings will be held in an open house format with a brief presentation at approximately 6:00 p.m. After the presentation, the open house will resume.

The Service will accept written comments at each meeting. Comments can also be submitted by email to OKES, HCP, EIS@fws.gov; or mailed to Field Supervisor, Oklahoma Ecological Services Field Office, U.S. Fish and Wildlife Service, 9014 E. 21st St., Tulsa, OK 74129. Please specify that your information request or comments concern the AEP draft EIS/HCP. Scoping comments are due by February 21, 2017.

For more information, please visit www.fws.gov/southwest/es/Oklahoma/.

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Stakeholder Notification

Stakeholder Notification

Organization Name
Adair County Commissioners
Arkansas Game and Fish Commission
Arkansas Natural Heritage Commission
Atoka County Commissioners
Audubon Arkansas
Bryan County Commissioners
Bureau of Indian Affairs-Eastern Oklahoma
Bureau of Indian Affairs-Southern Plains
Bureau of Land Management-Oklahoma Field Office
Bureau of Land Management-Southeastern States Field Office
Carter County Commissioners
Cherokee County Commissioners
Choctaw County Commissioners
Choctaw Nation of Oklahoma
Clark County
Cleveland County Commissioners
Coal County Commissioners
Craig County Commissioners
Crawford County
Creek County Commissioners
Deep Fork National Wildlife Refuge
Delaware County Commissioners
Environmental Protection Agency, Region 6
Farm Services Agency-Arkansas
Farm Services Agency-Oklahoma
Federal Energy Regulatory Commission
Federal Highway Administration
Fort Chaffee Joint Maneuver Training Center
Franklin County
Garvin County Commissioners
Haskell County Commissioners
Hempstead County
Hughes County Commissioners
Johnson County
Johnston County Commissioners
Latimer County Commissioners
Le Flore County Commissioners
Little River County
Little River National Wildlife Refuge
Logan County
Love County Commissioners
Marshall County Commissioners
Mayes County Commissioners

Stakeholder Notification

McAlester Army Ammunition Plant

McClain County Commissioners

McCurtain County Commissioners

McIntosh County Commissioners

Miller County

Murray County Commissioners

Muskogee County Commissioners

National Park Service, Fort Smith Historic Site

National Park Service, Regional Director

Natural Resources Conservation Service-Arkansas

Natural Resources Conservation Service-Oklahoma

Natural Resources Conservation Service-Texas

Nowata County Commissioners

NPS-Chickasaw National Recreation Area

Office of Surface Mining, Reclamation, and Enforcement

Okfuskee County Commissioners

Oklahoma Association of Conservation Districts

Oklahoma Biological Survey

Oklahoma Conservation Commission

Oklahoma Corporation Commission

Oklahoma Department of Agriculture

Oklahoma Department of Environmental Quality

Oklahoma Department of Mines

Oklahoma Department of Transportation

Oklahoma Department of Wildlife Conservation

Oklahoma Department of Wildlife Conservation, Wildlife Division Office

Oklahoma Fish and Wildlife Conservation Office

Oklahoma Parks and Resorts

Oklahoma Scenic Rivers Commission

Oklahoma Secretary of Environment

Oklahoma Water Resources Board

Oklahoma Water Science Center

Oklmulgee County Commissioners

Osage County Commissioners

Ottawa County Commissioners

Ozark Plateau National Wildlife Refuge

Pawnee County Commissioners

Pittsburg County Commissioners

Pontotoc County Commissioners

Pottawatomie County Commissioners

Pushmataha County Commissioners

Rogers County Commissioners

Scott County

Sebastian County

Stakeholder Notification

Seminole County Commissioners

Sequoyah County Commissioners

Sequoyah National Wildlife Refuge

Southwestern Power Administration

Texas Army National Guard-Environmental

Texas Commission on Environmental Quality

Texas Commission on Environmental Quality, Chief Engineer's Office

Texas Department of Agriculture

Texas Department of Transportation

Texas General Land Office

Texas Parks and Wildlife Department

Texas Parks and Wildlife Department, District 6

Texas Parks and Wildlife Department, District 5

Texas State Comptroller's Office

Texas Water Development Board

The Nature Conservancy-Arkansas Chapter

Thlopthlocco Tribal Town

Tishomingo National Wildlife Refuge

Tulsa County Commissioners

U.S. Army Corps of Engineers-Fort Worth District

U.S. Army Corps of Engineers-Little Rock District

U.S. Army Corps of Engineers-Tulsa District

U.S. Army Corps of Engineers-Vicksburg District

U.S. Forest Service Ouachita National Forest

U.S. Forest Service Ozark-St. Francis National Forest

U.S. Forest Service-National Forests & Grassland in Texas

Wagoner County Commissioners

Washington County Commissioners

Yell County

Appendix A-5
Tribal Notification

Tribal Notification

Organization Name

Absentee-Shawnee Tribe
Alabama-Quassarte Tribal Town
Apache Tribe of Oklahoma
Caddo Nation
Cherokee Nation
Cheyenne-Arapaho Tribes
Chickasaw Nation
Choctaw Nation of Oklahoma
Citizen Potawatomi Nation
Comanche Nation of Oklahoma
Delaware Nation of Oklahoma
Delaware Tribe of Indians
Eastern Shawnee Tribe of Oklahoma
Fort Sill Apache Tribe
Iowa Tribe of Oklahoma
Kaw Nation
Kialegee Tribal Town
Kickapoo Tribe of Oklahoma
Kiowa Tribe of Oklahoma
Miami Tribe of Oklahoma
Modoc Tribe of Oklahoma
Muscogee (Creek) Nation
Osage Nation of Oklahoma
Otoe-Missouria Tribe
Ottawa Tribe of Oklahoma
Pawnee Nation
Peoria Tribe of Indians of Oklahoma
Ponca Nation of Oklahoma
Quapaw Tribe of Oklahoma
Sac and Fox
Seminole Nation of Oklahoma
Seneca-Cayuga Tribe of Oklahoma
Shawnee Tribe
Thlopthlocco Tribal Town
Tonkawa Tribe of Oklahoma
United Keetoowah Band of Cherokee Indians
Wichita and Affiliated Tribes
Wyandotte Nation

Scoping Meeting Materials

Appendix B-1
Presentation

U.S. Fish and Wildlife Service

**Draft Environmental
Impact Statement** for the

American Electric Power Habitat Conservation Plan

**Public Scoping Meetings
for the American Electric Power
Habitat Conservation Plan
Environmental Impact
Statement**

February 6-9, 2017

1

U.S. Fish and Wildlife Service

**Draft Environmental
Impact Statement** for the

American Electric Power Habitat Conservation Plan

Proposed Action Overview


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U.S. Fish and Wildlife Service

Draft Environmental Impact Statement

for the

American Electric Power Habitat Conservation Plan



Proposed Action

- The American Electric Power Habitat Conservation Plan (AEP HCP) is being prepared by the American Electric Power Company.
- The AEP HCP addresses Endangered Species Act permit requirements.


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U.S. Fish and Wildlife Service

Draft Environmental Impact Statement

for the

American Electric Power Habitat Conservation Plan



Plan Area

Almost 32 million acres of
known and potential range for
American Burying Beetle in:

- 47 counties in Oklahoma
- 11 counties in Arkansas
- 4 counties in Texas




Figure 1-1: Plan Area

Source: USFWS, 2014; USFWS, 2015; USFWS, 2016

U.S. Fish and Wildlife Service

Draft Environmental Impact Statement for the

American Electric Power Habitat Conservation Plan

Covered Activities

- Covered Activities reflect activities for which the Service is considering incidental take authorization of Covered Species.
- Covered Activities for the AEP HCP comply with the ESA by including:
 - Avoidance, Minimization, & Mitigation including:
 - Implementation of the Conservation Strategy
 - On-site restoration after construction
 - Purchase of mitigation bank credits off-site
 - Species monitoring
 - Other actions

5

U.S. Fish and Wildlife Service

Draft Environmental Impact Statement for the

American Electric Power Habitat Conservation Plan

Covered Activities

- Electric Transmission and Distribution Lines: Operations and maintenance activities
 - Facility inspections, including land surveys and engineering assessments conducted prior to new and/or rebuild construction
 - Emergency response and outage repair
 - Vegetation management
 - Insulator replacement
 - Structure Maintenance
 - Underground electric maintenance
- Electric Transmission and Distribution Lines: New construction and rebuilds
 - Construction of new above-ground electric lines
 - Line upgrades
 - Support facilities construction
 - Access road construction

6



Covered Species

- Covered Species include species that may be affected by Covered Activities and that the Service is considering for an Incidental Take Permit.
- The AEP HCP addresses one covered species: American Burying Beetle.



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Endangered Species Act

- Section 9 of the Endangered Species Act (ESA) prohibits “take” of federally-listed fish and wildlife.
 - Take means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct” (16 U.S.C. 1532(19)).
 - Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.
 - Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering .

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U.S. Fish and Wildlife Service

Draft Environmental Impact Statement for the

American Electric Power Habitat Conservation Plan

Incidental Take Permit Issuance

- **The Service may issue permits to authorize “incidental take” under Section 10(a) of the ESA.**
 - Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity.
 - The Service may issue an incidental take permit provided certain criteria are met.
- **Section 10(a)(2)(B) of the ESA outlines criteria for issuing incidental take permits:**
 - The taking will be incidental;
 - The applicant will, to the maximum extent practicable, minimize and mitigate the impact of such taking;
 - The applicant will develop a Habitat Conservation Plan (HCP) and ensure that adequate funding for the plan will be provided;
 - The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
 - The applicant will carry out any other measures that the Secretary may require as being necessary or appropriate for the purposes of the HCP.

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U.S. Fish and Wildlife Service

Draft Environmental Impact Statement for the

American Electric Power Habitat Conservation Plan

Permit Term



- **Proposed permit term is 30 years**
 - **Term provide sufficient take coverage for AEP for its electric transmission and distribution system in the Plan Area.**
 - **Term allows for sufficient conservation of species.**

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U.S. Fish and Wildlife Service

**Draft Environmental
Impact Statement** for the

American Electric Power Habitat Conservation Plan





Environmental Review Process

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U.S. Fish and Wildlife Service

**Draft Environmental
Impact Statement** for the

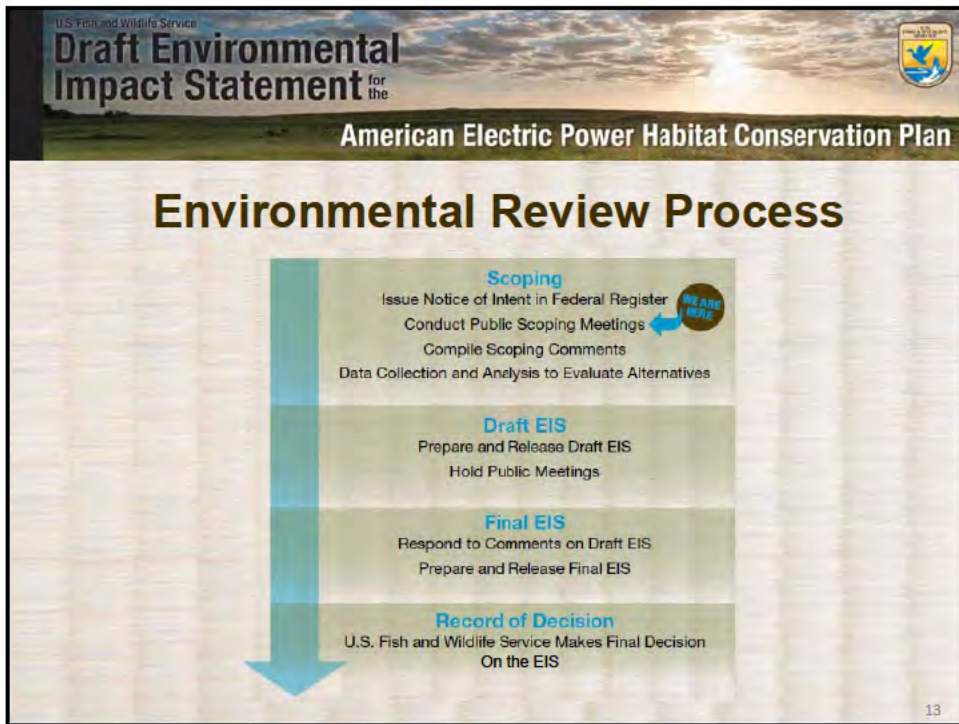
American Electric Power Habitat Conservation Plan




National Environmental Policy Act

- The National Environmental Policy Act (NEPA) requires federal agencies to prepare an Environmental Impact Statement (EIS) for major federal actions.
- Issuance of incidental take permits by the Service under the AEP HCP is a federal action subject to NEPA review.
- The EIS will consider the direct, indirect, and cumulative effects of the Service's federal action, including alternatives on the human environment.

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Draft Environmental Impact Statement for the
American Electric Power Habitat Conservation Plan

Comment Submittal

The Service encourages you to provide written comments on the following topics:

- **Scope of the EIS Analysis** – Specific topics or resources that should be considered in the EIS.
- **Alternatives** – Alternatives to the proposed action that should be evaluated in the EIS.
- **Data or Information** – Suggestions on data or information that should be considered in the EIS.

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Draft Environmental Impact Statement for the
American Electric Power Habitat Conservation Plan

Keys to Making Effective Comments

- Focus your comments on reasonable alternatives and potential environmental issues.
- Let us know what environmental and community factors you consider important for analysis in the Draft EIS.
- Suggest methods for analysis of environmental impacts.
- Submit comments that are clear, concise, and relevant to the project.
- Provide constructive solutions with documentation or resources to support your comments or recommendations.
- Comments that provide specific examples are more effective than comments simply stating opposition or making broad statements.

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U.S. Fish and Wildlife Service

**Draft Environmental
Impact Statement** for the

American Electric Power Habitat Conservation Plan

Comment Submittal

- **Please send written comments to:**
Field Supervisor, Oklahoma Ecological Services Field Office
U.S. Fish and Wildlife Service
9014 E. 21st St.
Tulsa, OK 74129
- **Electronically:** By email to OKES_HCP_EIS@fws.gov
- **At the Scoping Meetings:** Leave comment forms and written comments in the comment box at the meetings.

Comments submitted electronically will be given the same weight as mailed comments. For additional information, visit:
<https://www.fws.gov/southwest/es/Oklahoma/>

*Scoping comments must be received or postmarked by
February 21, 2017 to be considered in the Draft EIS.*

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U.S. Fish and Wildlife Service

**Draft Environmental
Impact Statement** for the

American Electric Power Habitat Conservation Plan

Adjourn

Thank you for your interest in the environmental review process. We will now resume the Open House portion of the meeting.

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Appendix B-2

Large Display Boards



Welcome to the Public Scoping Meeting

American Electric Power Habitat Conservation Plan

Environmental Review Process Overview

The National Environmental Policy Act (NEPA) requires federal agencies, including the U.S. Fish and Wildlife Service (Service), to prepare an Environmental Impact Statement (EIS) that considers the following factors when a proposed project could result in significant effects such as:

- Input from public, agency, tribal, and other affected entities
- A reasonable range of alternatives
- Direct, indirect, and cumulative impacts
- Environmental, cultural, social, economic, and human health impacts
- Mitigation to reduce adverse impacts

The Service's EIS will consider all possible impacts resulting from potential issuance of an Incidental Take Permit for the American Electric Power Habitat Conservation Plan (HCP).





American Electric Power Habitat Conservation Plan

Public Involvement

What Is Scoping and How Is Public Input Used In The Process?

Scoping is an early and open process that provides members of the public, agencies, tribes and other affected entities an opportunity to learn more about the project and provide input on:

- Areas of concern and public interest
- Relevant environmental, cultural, social, economic, and human health concerns
- Potential alternatives to consider in the Environmental Impact Statement (EIS)
- Potential measures or conservation strategies to minimize impacts

What Is A Substantive Comment?

- Clear, concise, and relevant to the EIS process for the proposed Habitat Conservation Plan (HCP)
- Suggest reasonable alternatives to the proposed HCP
- Propose methods for analysis of environmental impacts
- Present relevant information that can be used in the EIS process
- Raise concerns, with reasoning, on potential impacts or resource conflicts from the proposed HCP
- Question, with reasonable basis, the accuracy of information in the proposed HCP

What Type Of Comment Is Not Substantive?

- Comments that don't pertain to the proposed HCP or plan area
- Comments on Service policy or regulations
- Opposition or support to information considered without offering any substantive rationale
- Opinions or broad statements without justification or supporting data
- Comments that take the form of vague, open-ended questions

Are There Any More Opportunities to Comment?

After scoping concludes, the next formal opportunity for public involvement is when the Draft EIS is released for public review and comment.

American Electric Power Habitat Conservation Plan

Endangered Species Act and Incidental Take Permits

Section 9 of the federal Endangered Species Act (ESA) prohibits “take” of federally-listed fish and wildlife.

- Take means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct” (16 U.S.C. 1532(19)).

The U.S. Fish and Wildlife Service (Service) may issue permits to authorize “incidental take” of listed fish and wildlife species under Section 10(a) of the ESA. Incidental take is defined by the ESA as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. The Service may issue an incidental take permit provided the following criteria are met:

- The taking will be incidental;
- The applicant will, to the maximum extent practicable, minimize and mitigate the impact of such taking;
- The applicant will develop a proposed Habitat Conservation Plan and ensure that adequate funding for the plan will be provided;
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- The applicant will carry out any other measures as required by the Secretary of the Interior.



Draft Environmental Impact Statement for the



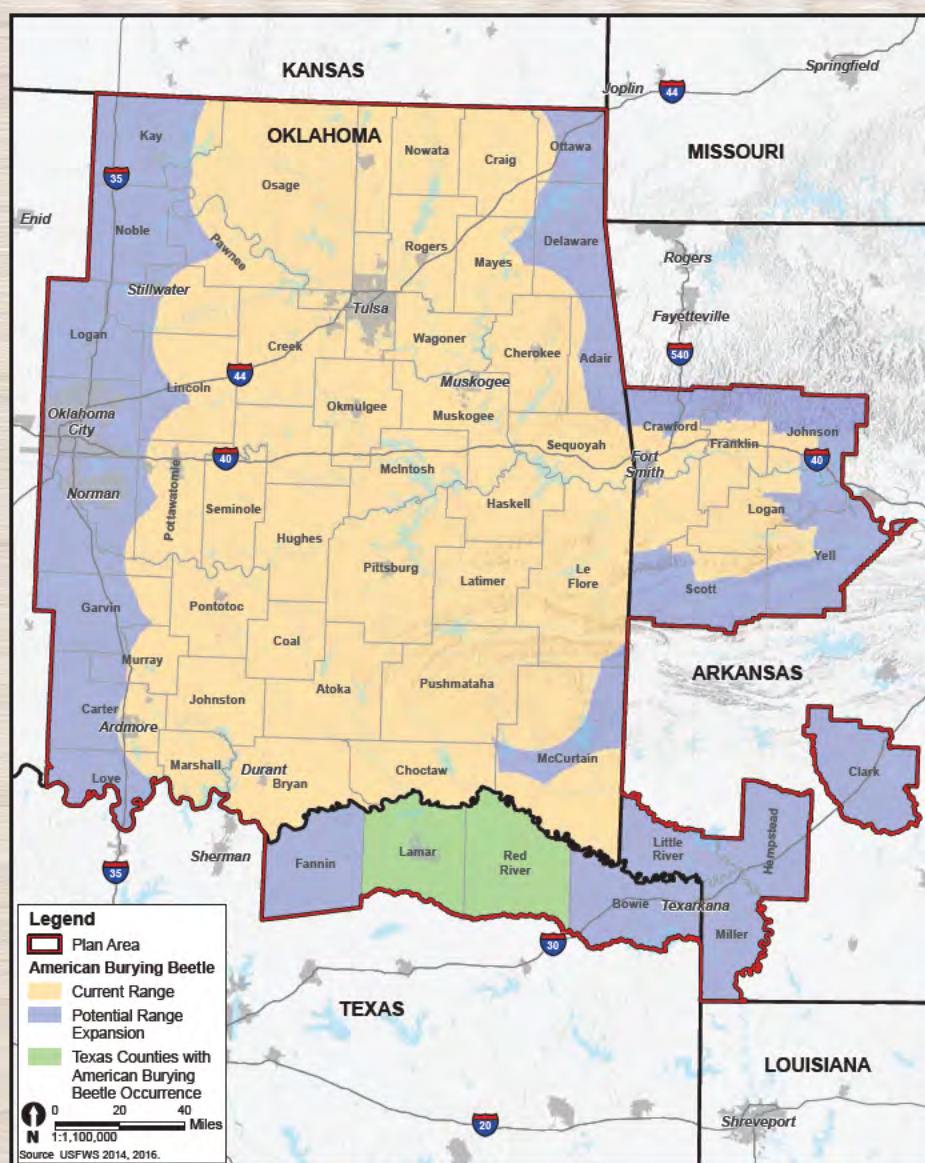
American Electric Power Habitat Conservation Plan

Covered Activities and Plan Area

American Electric Power has requested incidental take authorization for the American burying beetle for activities associated with electric power transmission and distribution throughout almost 32 million acres of known and potential range for the American burying beetle, including:

- 47 counties in Oklahoma
- 11 counties in Arkansas
- 4 counties in Texas

The covered activities include operation, construction, and maintenance of electric transmission and distribution lines, and implementation of the Habitat Conservation Plan's conservation strategy.



Draft Environmental Impact Statement for the



American Electric Power Habitat Conservation Plan

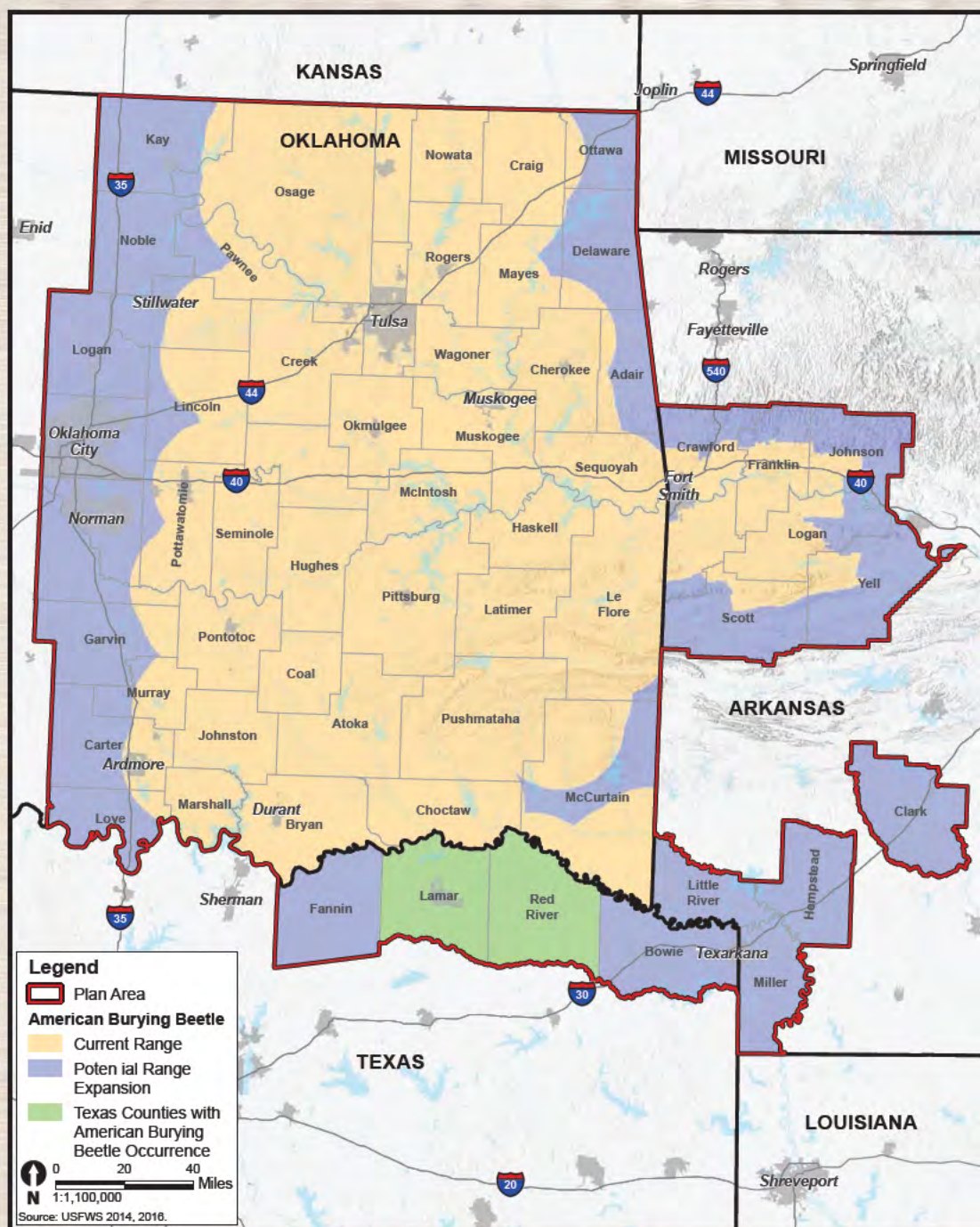
Plan Area

Almost 32 million acres of known and potential range for American burying beetle:

■ 47 counties in Oklahoma

■ 11 counties in Arkansas

■ 4 counties in Texas





American Electric Power Habitat Conservation Plan

Federal Action Requiring the National Environmental Policy Act (NEPA)

The federal action is to:

- Consider potential issuance of an Incidental Take Permit to American Electric Power to authorize take of American burying beetle from the covered activities in the plan area
- Minimize and mitigate the impacts of the take to the maximum extent practicable through implementation of conservation measures provided in a Habitat Conservation Plan (HCP)

While the U.S. Fish and Wildlife Service (Service) does permit the take resulting from the activities, the Service **does not** authorize the activities causing the incidental take (such as construction and operation of electric transmission and distribution lines).

Issues Analyzed in the NEPA Document

Issues should only be analyzed in an environmental document if they:

- Are related to potentially significant effects of the federal action
- Help lead to a reasoned choice among the alternatives

NEPA Alternatives for an HCP

The NEPA alternatives should meet the purpose and need of the action. The range of alternatives typically includes: the proposed action, no action, and one or more variations of the proposed action. NEPA alternatives to a proposed HCP consider permit issuance, take authorization, and permit terms and conditions, including:

- Varying types and amounts of take
- Varying environmental effects unrelated to the covered species
- Other measures or conservation strategies to minimize impacts
- Permit duration, covered lands, covered activities, covered species, or an alternative conservation program

Draft Environmental Impact Statement for the



American Electric Power Habitat Conservation Plan

Please Send Comments to:

Hard Copy – Submitted by U.S. Mail:

Field Supervisor
Oklahoma Ecological Services Field Office
U.S. Fish and Wildlife Service
9014 E. 21st St.
Tulsa, OK 74129

Electronically:

Email to OKES_HCP_EIS@fws.gov

Please specify that your information request or comments concern the AEP Draft HCP/EIS.
Comments must be postmarked by February 21, 2017 to be considered in the Draft EIS.

Draft Environmental Impact Statement for the



American Electric Power Habitat Conservation Plan

Thank You

Thank you for participating in the public scoping meetings and providing your comments.
Scoping comments must be received or postmarked by February 21, 2017 to be considered in the Draft EIS.

Please remember to:

- Complete a registration card to document your participation and receive future mailings
- Submit your comments to the Service
- Visit the Service website to learn more

For more information, visit: <https://www.fws.gov/southwest/es/Oklahoma/>

Questions and comments should be addressed to:

Field Supervisor
Oklahoma Ecological Services Field Office
U.S. Fish and Wildlife Service
9014 E. 21st St.
Tulsa, OK 74129
OKES_HCP_EIS@fws.gov

Appendix B-3

Handouts

Draft Environmental Impact Statement for the



American Electric Power Habitat Conservation Plan

Frequently Asked Questions & Answers

The following questions and answers summarize the permitting and conservation planning process and American Electric Power's proposal, describe the National Environmental Policy Act (NEPA) process, and outline opportunities for public participation.

1. What action is the U.S. Fish and Wildlife Service taking?

The U.S. Fish and Wildlife Service (Service) is responding to a request from the American Electric Power Company (AEP) for a permit under the Endangered Species Act. The Incidental Take Permit (ITP) would cover potential effects to the American burying beetle. Federal law requires the Service to consider the potential effects of the permit, in this case by preparing a Draft Environmental Impact Statement (EIS).

As the Service prepares to draft this document, we have opened a 30-day public comment period closing February 21, 2017, to receive input, suggestions and information on the scope of the Draft EIS.

2. Why does AEP need an ITP?

Section 9 of the Endangered Species Act (ESA) prohibits the "take" of protected wildlife through direct harm or habitat destruction. However, the ESA also allows the Service to issue permits for the "incidental" take of endangered and threatened wildlife. Permit holders can proceed with an activity that is legal in all other respects, but that may incidentally take listed wildlife. An example would be the operation of electrical transmission lines through known American burying beetle habitat.

To receive a permit, applicants must design, implement and secure funding for a conservation plan that avoids, minimizes and offsets (mitigates) harm to wildlife impacted by their activity. That plan is commonly called a Habitat Conservation Plan, or HCP. HCPs are legally binding agreements between the Secretary of the Interior and the permit holder.

3. What is the AEP HCP?

AEP proposes development of an HCP to allow for a more comprehensive mitigation approach for impacts. The HCP will cover activities including, but not limited to, construction, operation, and/or maintenance of electrical transmission and distribution lines or other associated infrastructure and will address how these activities may incidentally take the endangered American burying beetle. Additional information on the plan area, covered activities, and covered species is provided below.

4. What species are covered by the HCP?

The AEP HCP will address incidental take of the American burying beetle that could be affected by electric power transmission and distribution activities. The American burying beetle is protected as endangered under the ESA.

5. Area other species covered by the HCP?

Numerous other species listed as either threatened or endangered under the ESA are found in the HCP plan area. The Service will evaluate whether the covered activities will impact other species and whether they should be included on the permit or if management practices can be implemented that are sufficient to avoid take. While the Service does not anticipate that covered activities will result in take of these other species, we seek comments to help inform our evaluation. Refer to the project website for the full list of federally protected species in the plan area: www.fws.gov/southwest/es/Oklahoma/.

6. What geographic area is covered by the proposed HCP?

The geographic area covered by the HCP is referred to as the *plan area*. The plan area includes counties within the known range of American burying beetle as well as counties in Texas with occurrence records. It also includes counties where the species range could expand over the next 30 years. In total, the plan area encompasses almost 32 million acres of known and potential range of American burying beetle across sixty-two counties in eastern Oklahoma, western Arkansas, and north-eastern Texas.



7. What activities would the Service issue an ITP for under the AEP HCP?

AEP has requested incidental take authorization for covered activities associated with electric power transmission and distribution. A preliminary list of covered activities includes:

- Electric Transmission and Distribution Lines: Operations and maintenance activities
 - Facility inspections, including land surveys and engineering assessments conducted prior to new and/or rebuild construction
 - Emergency response and outage repair
 - Vegetation management
 - Insulator replacement
 - Structure maintenance
 - Underground electric maintenance
- Electric Transmission and Distribution Lines: New construction and rebuilds
 - Construction of new above-ground electric lines
 - Line upgrades
 - Support facilities construction
 - Access road construction
- Implementation of the Conservation Strategy
 - On-site restoration after construction
 - Purchase of mitigation bank credits off-site
 - Species monitoring
 - Other actions (TBD)

8. What permit term is the Service considering under the AEP HCP?

AEP has requested a 30-year permit. The permit term is intended to provide sufficient take coverage for American Electric Power for its electric transmission and distribution system as well as to allow for sufficient conservation of species.

9. Why is an EIS needed?

NEPA requires federal agencies to consider and disclose the environmental impacts of their proposed actions. This federal law promotes better agency decision-making by ensuring that the best available information is provided to agency officials and the public before an agency decides whether and how to undertake a major federal action.

Due to the scope of this project, the Service determined that an EIS should be prepared to analyze the potential effects of the proposed federal action (ITP) and alternatives to that proposed action. The analysis provided in the EIS will be used to inform the Service's decision on whether or not to issue an incidental take permit for the AEP HCP.

Through the NEPA process, the public has an opportunity to learn about proposed federal actions and to provide timely information and comments. An HCP is a planning document required as part of an application for an ITP. Issuance of the ITP by the Service is a federal action subject to review under NEPA.

10. Where are we in this process?

The Service is in the scoping phase, which is the first step in preparing an EIS. The purpose of scoping is to ask for early input from the public, other government agencies, the scientific community, tribes, industry and other interested parties. We want to hear from others about what resource areas, topics, and alternatives that should be evaluated in the EIS, as well as suggestions on data or information that should be considered in the EIS analysis. During the scoping period, you can learn about the proposed action and the EIS process, attend a public scoping meeting and talk with representatives of the Service, and provide written comments on the scope and approach for completing the EIS.

11. When is scoping and what type of input does the Service need?

The scoping period for this EIS is 30 days, from January 19, 2017 to February 21, 2017, during which time a public comment period is open. Comments should be emailed or postmarked by February 21, 2017 to be considered in the Draft EIS.

During the scoping period, the Service requests your comments on the scope of the EIS, including the following topics such as:

- Scope of the EIS analysis – Specific topics or resource concerns that should be considered in the EIS
- Alternatives – Alternatives to the proposed action that should be evaluated in the EIS
- Data or information – Suggestions on data or information that should be considered in the EIS

Comments may be submitted using one of the following methods:

- **Hard Copy – Submitted by U.S. Mail:**

Field Supervisor, Oklahoma Ecological Services Field Office
U.S. Fish and Wildlife Service
9014 E. 21st St.
Tulsa, OK 74129

- Electronically: By email to OKES_HCP_EIS@fws.gov.
- At the Public Scoping Meetings: You will have the opportunity to submit written comments at the public scoping meetings.

12. Where are public scoping meetings being held?

Four public scoping meetings are being held to provide the public with an opportunity to ask questions and discuss issues with representatives of the Service regarding the EIS and provide written comments. The meetings will be held at the following locations:

Date and Time	Location
February 6, 2017 5:30-7:30 p.m. CST	Eastern Oklahoma State College, McAlester Campus Conference Center 1802 E. College Avenue, McAlester, OK 74501
February 7, 2017 5:30-7:30 p.m. CST	Texarkana College, Truman Arnold Student Center Levi Hall Conference Room 2500 North Robison Road, Texarkana, TX 75599
February 8, 2017 5:30-7:30 p.m. CST	River Park Events Building West Room 121 Riverfront Drive, Fort Smith, AR 72901
February 9, 2017 5:30-7:30 p.m. CST	Central Center Auditorium 1028 East 6 th Street, Tulsa, OK 74120

The public scoping meetings will be held in an open house format with a brief presentation at approximately 6:00 p.m. After the presentation, the open house will resume.

13. What are the next steps?

After the scoping period closes, the Service will prepare a Draft EIS that evaluates the effects of the HCP and any alternatives identified during scoping. A second opportunity for public comment will be provided when the Draft EIS is completed. The Service anticipates a Draft EIS will be ready for public review in the summer/fall of 2017.

For more information about the AEP HCP, the EIS, and the NEPA process, contact us by mail at the U.S. Fish and Wildlife Service, Oklahoma Ecological Services Field Office, 9014 E. 21st St., Tulsa, OK 74129 or by phone at (918) 581-7458.

Draft Environmental Impact Statement for the



American Electric Power Habitat Conservation Plan

How to Participate in the Process

The U.S. Fish and Wildlife Service (Service) is considering potential issuance of an Incidental Take Permit (ITP) to American Electric Power to authorize take of American burying beetle from the covered activities in the plan area. The plan area includes 32 million acres of known and potential range of American burying beetle across sixty-two counties in eastern Oklahoma, western Arkansas, and north-eastern Texas. Issuance of an ITP by the Service is a federal action subject to review under the National Environmental Policy Act (NEPA). The Service will prepare an Environmental Impact Statement (EIS) for this action.

Learn About the Project: Visit the project website, participate and ask questions during public scoping meetings, and read the materials provided at meetings and on the Service website. Sign up to receive notifications about the project.

Participate During Review and Comment Periods: The NEPA process provides several formal opportunities for public input at key project milestones. During these milestones, the Service will post notices in the *Federal Register*, issue press releases, and provide updates on the Service website.

The Service may also host public meetings during these periods.

Formal Review and Comment Periods	Timeframes
Scoping	
<p>A 30-day period at the start of the NEPA process intended to allow the public to learn about the action and provide input on the scope of the EIS, including:</p> <ul style="list-style-type: none"> Alternatives – Alternatives to the proposed action that should be evaluated in the EIS Data or information – Suggestions on data or information that should be considered in the EIS Analysis – Specific topics or resource concerns that should be analyzed in the EIS 	<p>The scoping period for this project is open from January 19, 2017 to February 21, 2017.</p> <p>Comments need to be emailed or postmarked by February 21, 2017 to be considered in the Draft EIS.</p>
Public Review of the Proposed Habitat Conservation Plan (HCP) and Draft EIS	
A 60-day period to allow the public to review and comment on the HCP and the accompanying Draft EIS.	Draft EIS anticipated to be ready for public review in the summer/fall of 2017.
Availability Period of the HCP, Final EIS, and Record of Decision	
A 30-day period to allow the public to review document revisions and inform the public of the Service's decision.	Final EIS anticipated to be ready for public review in late 2017.

Provide Substantive Comments During Open Comment Periods: The best and most useful comments have substance and are relevant to the federal action under review. Try not to provide comments that offer opinion only or make broad statements with no supporting information.

How To Submit Your Comments:

- All comments must be provided in writing.
- Comments must be received or postmarked by the close of the open period for full consideration in the next step of the process.
- Comments submitted electronically will be given the same weight as mailed comments.
- Comments only need to be submitted once via one method noted below.
- Duplicate comments with no new or additional information will not be considered and are unnecessary.

Send your written comments to the Service using one of the following methods:

- Hard Copy – Submitted by U.S. Mail:
Field Supervisor, Oklahoma Ecological Services Field Office
U.S. Fish and Wildlife Service
9014 E. 21st St.
Tulsa, OK 74129
- Electronically: By email to OKES_HCP_EIS@fws.gov
- In-Person at public meetings: Leave comment forms and written comments in the comment box at the meetings

For additional information about the American Electric Power HCP, Draft EIS, and the NEPA process:

- Visit: <https://www.fws.gov/southwest/es/Oklahoma/>
- Contact the Service:
 - By mail at the U.S. Fish and Wildlife Service, Oklahoma Ecological Services Field Office, 9014 E. 21st St., Tulsa, OK 74129
 - By phone at (918) 581-7458

Appendix B-4
Comment Form



- **Written Comments:** Complete and submit this form at a public scoping meeting, or mail your comments to the U.S. Fish and Wildlife Service (Service) address at the bottom of this page.
- **Electronic Comments:** Submit electronic comments by email to OKES_HCP_EIS@fws.gov.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slightly textured appearance and is set against a dark background.

NAME: _____

ADDRESS: _____

CITY, STATE, ZIP CODE: _____

PHONE: _____

E-MAIL: _____

Field Supervisor
Oklahoma Ecological Services
Field Office
U.S. Fish and Wildlife Service
9014 E. 21st St.
Tulsa, OK 74129

For more information, please visit www.fws.gov/southwest/es/Oklahoma/

Appendix B-5
Registration Card

U.S. Fish and Wildlife Service

Draft Environmental Impact Statement for the



American Electric Power Habitat Conservation Plan

Public Scoping Meeting Registration Card

MEETING LOCATION AND DATE (CHECK ONE):

☐ FEBRUARY 6, 2017 **MCALESTER, OK**

☐ FEBRUARY 8, 2017 **FORT SMITH, AR**

☐ FEBRUARY 7, 2017 **TEXARKANA, TX**

☐ FEBRUARY 9, 2017 **TULSA, OK**

FIRST NAME

LAST NAME

ORGANIZATION/TITLE

MAILING ADDRESS

CITY

STATE

ZIP CODE

E-MAIL

Yes, please include my name and address on the mailing list so I can receive information on the project.

Please indicate your preferred method of correspondence: ☐ Mail or ☐ E-mail

Appendix C

Scoping Comments

United States Department of the Interior



OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
Mid-Continent Region Technical Services Branch
William L. Beatty Federal Building
Alton, Illinois 62002



February 16, 2017

Mr. Laurence Levesque
Oklahoma Ecological Service Field Office
U.S. Fish and Wildlife Service
9014 E. 21st Street
Tulsa, OK 74129

Dear Mr. Levesque:

As a cooperating agency for the Environmental Impact Statement for issuance of an Incidental Take Permit for the Federally endangered American burying beetle related to American Electric Power's Habitat Conservation Plan, the Office of Surface Mining Reclamation and Enforcement (OSMRE) is providing these comments as part of the public scoping period.

The OSMRE has two major programs that include a reclamation program for abandoned mine lands adversely affected by pre-1977 coal mining and an environmental protection program that establishes standards and procedures for permitting and inspecting surface and underground coal mining reclamation operations. OSMRE completed programmatic Section 7 consultations nationwide under a 1996 Biological Opinion, which has recently been updated to the 2016 Biological Opinion, that serves the regulatory program and the states' implementation of the Biological Opinion. These opinions both resulted in the Service's opinion that surface coal mining and reclamation operations conducted in accordance with properly implemented Federal and State regulatory programs under SMCRA are not likely to jeopardize the continued existence of listed or proposed species, and are not likely to result in the destruction or adverse modification of designated or proposed critical habitats. The abandoned mine land program coordinates each individual project or has completed a Memorandum of Understanding to expedite the process. If needed, we can provide both the 1996 and 2016 Biological Opinions to you.

OSMRE is currently preparing geospatial data that may be of use during the scoping period and in your cumulative effects analysis. This data may include, but is not limited to: currently permitted sites and their boundaries within Arkansas, Oklahoma, and Texas; coal regions; current Federal coal permitted sites; Bureau of Land Management leases; and current information on abandoned mine land features in Arkansas, Oklahoma, and Texas. As soon as we have this data prepared, we will forward it to you via electronic submission. If the files are too large, we will send you a hard copy in the mail.

OSMRE does not have any further comments during the scoping period, but looks forward to working with the Service throughout the development of the Environmental Impact Statement.

If you have any questions or seek additional data, please contact Brandon Schneider at 618-463-6463 ext. 5112, or e-mail at bschneider@osmre.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Paul J. Ehret", with a stylized, flowing script.

Paul J. Ehret, Chief,
Program Support Division
Mid-Continent Region

From: **Daniel R. Ragle** <dragle@choctawnation.com>

Date: Sat, Feb 18, 2017 at 12:26 PM

Subject: RE: Service Announces Public Scoping Process For American Electric Power's Proposed Conservation Plan for the American Burying Beetle

To: "OK ES HCP EIS, FW2" <okes_hcp_eis@fws.gov>

Thank you for the correspondence regarding the above referenced project. The Choctaw Nation of Oklahoma has no comments for the Incidental Take Permit, regarding the American Burying Beetle. Please send the Environmental Impact Statement, once one is available. If you have any questions, please contact me by email.

Daniel Ragle

Compliance Review Officer

Historic Preservation Dept.

Choctaw Nation of Oklahoma

(800) 522-6170 Ext. 2727

dragle@choctawnation.com

www.choctawnation.com

www.choctawnationculture.com





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February 27, 2107

Ms. Jonna Polk
Field Supervisor
Oklahoma Ecological Services Office
U.S. Fish and Wildlife Service 9014 E. 21st Street
Tulsa, OK 74129

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Houston

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Vice-Chairman
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Austin

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Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

Re: Scoping for DEIS for AEP American Burying Beetle HCP
62 Counties in Oklahoma, Arkansas and Texas
TPWD Project 37564

Dear Ms. Jonna Polk:

The Texas Parks and Wildlife Department (TPWD) received the January 18, 2017 bulletin regarding the U.S. Fish and Wildlife Service (USFWS) notice of intent to prepare a draft Environmental Impact Statement (DEIS) to evaluate the impacts of alternatives related to the proposed issuance of an Incidental Take Permit (ITP) in response to American Electric Power's (AEP) Habitat Conservation Plan for the endangered American burying beetle (*Nicrophorus americanus*) (ABB). AEP is developing an HCP to address impacts to the ABB that may result from the construction, operation, and/or maintenance of electric transmission and distribution lines or other associated infrastructure in 62 counties in Oklahoma, Arkansas and Texas. The draft HCP would accompany AEP's request for an ITP. The DEIS will consider the proposed issuance of an ITP, which would be supported by an HCP, and a no action alternative. In Texas, the permit area would include Bowie, Fannin, Lamar, and Red River Counties. Although the species covered under the requested ITP is the ABB, the USFWS will be evaluating whether the covered activities would impact other species and whether other species should be included on the ITP or if management practices can be implemented that are sufficient to avoid take.

As the state agency with primary responsibility for protecting the state's fish and wildlife resources and in accordance with the authority granted by Parks and Wildlife Code §12.0011 and through coordination under the National Environmental Policy Act, the TPWD has considered the no alternative and the proposed ITP and draft HCP alternative and offers the following comments and recommendations.

ABB

Conservation Priority Areas (CPA) of the ABB range include areas with recent (within 10 years) documented ABB presence that USFWS believes are likely to contain important elements for ABB conservation and recovery, such as documented presence over multiple years, relatively high density populations, suitable breeding, feeding and sheltering habitat, and carrion resources. At this time all CPAs are located within Oklahoma and serve as areas where conservation efforts are focused and where higher ratios of mitigation for impacts to ABB occur.

At this time, TPWD does not have information on current populations of ABB in Texas, with long term surveying efforts indicating absence in survey areas or loss of populations over the survey term. The last ABB in Texas was recorded in Lamar County in 2008, so technically still considered a recent ABB presence, however, the ten year timeframe for considering the population recent is coming to an end. TPWD is currently funding an ABB survey effort through a Section 6 grant, and depending on those results, TPWD may have adequate knowledge of the status of ABB in Texas, or TPWD and USFWS may recognize the need for additional research or surveying.

With the lack of current ABB populations in survey areas in Texas, TPWD can understand that the USFWS may want to mitigate in Oklahoma CPAs for ABB habitat impacts that occur in Texas, however, TPWD does not want to continue to lose ABB habitat in Texas which could support ABB populations in the future with appropriate restoration efforts. Lack of mitigation in Texas coupled with impacts to ABB habitat in Texas could lead to a range contraction and/or extirpation in Texas.

Recommendation: TPWD recommends that the HCP for AEP include conducting valid and current ABB presence/absence surveys for activities in areas favorable for use by the ABB in Bowie, Fannin, Lamar and Red River counties, Texas.

Recommendation: TPWD encourages mitigation in Texas for ABB habitat impacts that occur in Texas, to protect or restore ABB habitat in Texas. TPWD recommends the USFWS consider the following as acceptable mitigation practices: support research surveying for occupied habitat, habitat restoration and/or acquisition, and establishment of conservation easements.

Recommendation: If data confirming ABB presence in Texas becomes available, TPWD recommends the USFWS identify a Texas-CPA and develop a conservation bank, foregoing the need for multiple years of documented presence to assign a Texas-CPA. It is essential that populations in Texas be protected from take and provided mitigation in Texas when an ITP is the only feasible alternative.

Additional Species

Additional Species: Endangered Species

The federal register notice, provided by a link on the USFWS Oklahoma Ecological Services website (<https://www.fws.gov/southwest/es/oklahoma/Documents/ABB/AEP%20HCP%20EIS%20NOI.pdf>), indicates that the DEIS will evaluate whether covered activities will result in take of a list of other federally-listed threatened and endangered species, which are protected under the Endangered Species Act (ESA), and if activities would impact the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*), which are protected under the Bald and Golden Eagle Protection Act (BGEPA). The bald eagle is also a state-listed threatened species in Texas.

Recommendation: Regarding additional species that should be considered in the DEIS with regard to the ITP and HCP alternative, TPWD recommends the DEIS assess the potential impacts to all the threatened and endangered species identified

in the federal register notice, the bald eagle, the golden eagle, as well as the threatened red knot (*Calidris canutus rufa*), which did not appear on the list.

Of the species listed and potentially occurring in Bowie, Fannin, Lamar and Red River counties, the interior least tern (*Sterna antillarum athalassos*) may utilize sand bars in the Red River for nesting and bald eagles may nest in trees along the Red River.

Recommendation: For proposed activities in or crossing the Red River, TPWD recommends that the HCP for AEP include protections of sand bar habitat, protection of potential eagle nesting trees, and surveys for interior least terns and bald eagles in areas of suitable habitat prior to construction within the breeding and nesting season.

Additional Species: Migratory Birds

The federal register notice does not indicate if the DEIS would evaluate potential impacts to migratory birds, other than those already afforded protection under the ESA and BGEPA.

Birds typically establish flight corridors along and within river and creek drainages. Riparian corridors, creeks, wetlands, and lakes provide habitat for a host of wildlife species including wading birds, waterfowl and predator species. There is potential for collision of large-bodied wading birds, waterfowl and avian predators with electrical wires near water features. Measures should be taken to ensure that migratory bird species within and near the project area are not adversely impacted by construction, maintenance, and operation activities.

The USFWS Information for Planning and Conservation (IPaC) web-based tool offers a list of migratory birds that may occur within a project area, some of which are state-listed or identified as species of greatest conservation need (SGCN) in the Texas Conservation Action Plan (TCAP).

Recommendation: TPWD recommends the DEIS evaluate impacts to migratory birds and recommends the HCP for AEP incorporate strategies for avoiding or minimizing impacts to migratory birds, including surveying for active nests during ground disturbance activities and implementing practices to minimize bird collisions with transmission lines. TPWD recommends the HCP for AEP incorporate electric utility conservation measures that can be found on the USFWS website at <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures/electric-utility.php> including the Avian Power Line Interaction Committee guidance. Implementing the conservation measures for migratory birds would also protect federally-listed species such as the endangered whooping crane (*Grus americana*), as well as state-listed species and SGCN, such as the state-listed threatened wood stork (*Mycteria americana*).

Recommendation: Because artificial nighttime lighting can attract and disorient night-migrating birds, TPWD recommends that the HCP and DEIS address AEP substations and other lighted infrastructure. TPWD recommends AEP retrofit substations and other lighted infrastructure to utilize the minimum amount of night-

time lighting needed for safety and security. TPWD recommends lighting be down-shielded to light only the ground and reduce glare.

Additional Species: State-listed Species and SGCN

Section 68.015 of the Parks and Wildlife Code regulates state-listed species. Please note that there is no provision for capture, trap, take, or kill (incidental or otherwise) of state-listed species. The *TPWD Guidelines for Protection of State-Listed Species* includes a list of penalties for capture, trap, take, or kill of state-listed species, http://www.tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/media/tpwd_statelisted_species.pdf. For purposes of relocation, surveys, monitoring, and research, terrestrial state-listed species may only be handled by persons authorized through the TPWD Wildlife Permits Office, <http://www.tpwd.texas.gov/business/permits/land/wildlife/research/>. For the above-listed activities that involve aquatic species please contact the TPWD Kills and Spills Team (KAST) for the appropriate authorization, http://www.tpwd.texas.gov/landwater/water/enviromconcerns/kills_and_spills/regions/.

The Texas Natural Diversity Database (TXNDD) is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Please note that absence of information in the database does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. This information cannot be substituted for on-the-ground surveys. The TXNDD is updated continuously based on new, updated and undigitized records. For questions regarding a record or to obtain digital data, please contact TexasNatural.DiversityDatabase@tpwd.texas.gov.

A search of the TXNDD identified known occurrences of state-listed species and other sensitive resources within or near the four Texas counties of the HCP area, including but not limited to, the bald eagle, the interior least tern, native prairie communities, colonial waterbird rookeries, SGCN plants, and the Southern crawfish frog (*Lithobates areolatus areolatus*). Specific locations of rare resources may not be known by TPWD or included in the TXNDD, therefore rare resources may exist where suitable habitat characteristics are present.

The Texas Conservation Action Plan (TCAP) provides guidance toward addressing species of greatest conservation need (SGCN) and important habitats and includes a statewide handbook as well as handbooks for each ecoregion of the state. In Texas, the AEP HCP area would occur in the Texas Blackland Prairies, East Central Texas Plains (also known as the Post Oak Savannah) and Western Gulf Coastal Plain (also known as South Central Plains or Pineywoods) ecoregions. To help guide your planning efforts, information on the TCAP, handbooks and lists of SGCN can be found at <http://www.tpwd.state.tx.us/landwater/land/tcap/>. The TCAP identifies priority

habitats as well as priority issues affecting conservation and conservation action needs for the ecoregion, including electric power transmission and distribution issues.

Please note that in addition to the TCAP SGCN lists by ecoregion, TPWD maintains a website that identifies state-listed species and SGCN that have the potential to occur in each Texas county and are available at <http://tpwd.texas.gov/gis/rtest/>. Using this web-based tool will allow you to produce one complete list of state-listed species and SGCN for Bowie, Fannin, Lamar, and Red River counties.

Recommendation: Because an EIS is meant to assess potential impacts to all environmental resources, TPWD recommends the DEIS incorporate an assessment of potential impacts to state-listed species and SGCN.

Recommendation: TPWD recommends reviewing the TCAP statewide handbook and the Texas Blackland Prairies, East Central Texas Plains and Western Gulf Coastal Plain ecoregion handbook for information on important habitats and SGCN within the project area and incorporating TCAP priority issues and conservation needs into the DEIS, as applicable.

Recommendation: To aid in the scientific knowledge of a resource's status and current range, TPWD recommends that the HCP include a provision to report encounters of state-listed species, SGCN, and rare vegetative communities in the AEP HCP area in Texas to the TXNDD according to the data submittal instructions found at <http://tpwd.texas.gov/txnndd>.

Additional Species: Invasive Species

Invasive species can affect native resources, thus it is important to consider the prevention, monitoring and control of invasive species with respect to conservation of endangered species and other fish and wildlife resources. Although surface waters are generally spanned by transmission lines, temporary and permanent stream crossings installed to accommodate machinery and vehicle access may require work within surface waters. Equipment coming in contact with surface waters could transport aquatic invasive species where mud, plant debris, and/or water can accumulate. Infestations of terrestrial invasive plant species can occur in disturbed areas without proper prevention, revegetation and maintenance practices.

Recommendation: TPWD recommends the DEIS address invasive species prevention and management and recommends that the AEP HCP include provisions regarding invasive species. If equipment would come in contact with inland streams or waterbodies, such as during construction/demolition of temporary and permanent crossings, TPWD recommends AEP prepare and follow an aquatic invasive species transfer prevention plan which outlines BMPs for preventing inadvertent transfer of aquatic invasive plants and animals on project equipment. For information on how to avoid spreading harmful aquatic invasive species, please refer to the *TPWD Clean/Drain/Dry Procedures and Zebra Mussel Decontamination Procedures for Contractors Working in Inland Public Waters* which can be obtained at http://tpwd.texas.gov/huntwild/wild/wildlife_

Ms. Jonna Polk
Page 6
February 27, 2017

diversity/habitat_assessment/media/WHAB_ZebraMussel_CleanDrainDryDecontaminationProcedures_Final_02052015.pdf.

Recommendation: TPWD recommends AEP prepare and follow a revegetation and maintenance plan to monitor, treat and control invasive species within the construction and operation ROWs. Revegetation should be conducted such that it provides native vegetation appropriate for the ecoregion and site characteristics.

Thank you for considering the fish and wildlife resources of Texas in your project planning efforts. If you have any questions, please contact me at (903) 322-5001 or Karen.Hardin@tpwd.texas.gov.

Sincerely,



Karen B. Hardin
Wildlife Habitat Assessment Program
Wildlife Division

kbh/37564

Appendix E

Biological Resources

Appendix E

Biological Resources

This appendix contains additional material that supports EIS Section 3.2, *Biological Resources*, including the following:

- Ecoregions and vegetation communities and species in the study area (Table E-1)
- National Land Cover Database definitions (Table E-2)
- Invasive plants listed under state statute or regulation in the study area (Table E-3)
- Common or typical wildlife species in the study area by ecoregion (Table E-4)
- Migratory birds of conservation concern that occur or have the potential to occur in study area (Table E-5)

Table E-1. Ecoregions and Vegetation Communities and Species in the Study Area

Ecoregion Name	Common Vegetation Communities and Species	Amount in Study Area (acres)			Total
		AR	OK	TX	
Arkansas Valley	Natural vegetation included oak savanna and oak-hickory-pine forests. Post oak, blackjack oak, southern red oak, hickory, shortleaf pine, some planted loblolly pine. Floodplains have bottomland oaks, sycamore, sweetgum, willow, eastern cottonwood, green ash, elm.	1,930,431	3,078,991	0	5,009,422
Boston Mountains	Mostly oak-hickory forests: red oak, white oak, post oak, blackjack oak, and hickories remain the dominant tree species, although shortleaf pine and eastern red cedar are found in many of the lower areas and on some south- and west-facing slopes. Mesophytic forests in ravines and on north-facing slopes have sugar maple, beech, red oak, white oak, basswood, and hickory.	618,470	530,433	0	1,148,903
Central Great Plains	Once a transitional, mostly mixed-grass prairie, with some scattered low trees and shrubs in the south, much of this ecoregion is now cropland. Little bluestem, big bluestem, sideoats grama, blue grama, Indiangrass, sand bluestem, sand dropseed were typical. To the south are Texas wintergrass, buffalograss, white tridens, along with some honey mesquite, lotebush, sand sagebrush, and yucca.	0	3,205,341	0	3,205,341
Central Irregular Plains	The historical vegetation is a grassland/forest mosaic with forested strips along the streams. The grassland was an all-grass prairie with little bluestem, big bluestem, switchgrass, and Indiangrass, and the forests are oak-hickory woodlands with red oak, white oak, bur oak, chinkapin oak, post oak, shagbark hickory, and bitternut hickory.	0	3,334,151	0	3,334,151
Cross Timbers	Transitional “cross-timbers” vegetation consists of little bluestem grassland with scattered blackjack oak and post oak trees. Big bluestem, Indiangrass, switchgrass, elm, black hickory, greenbriar, and Virginia creeper also occur. A dense woody understory forms in the absence of fire.	0	7,530,191	0	7,530,191
East Central Texas Plains	The land was originally covered by post oak savanna vegetation, in contrast to the more open prairie-type ecoregions to the north, south, and west, and the pine forests to the east. Oak savannas or oak-hickory forest stands with post oak, blackjack oak, black hickory, and grasses of little bluestem, purpletop, curly threeawn, and yellow Indiangrass. The forest understory is of yaupon, eastern red cedar, winged elm, American beautyberry, and farkleberry.	0	242,447	848,237	1,090,684
Flint Hills	The Flint Hills mark the western edge of the tallgrass prairie, and contain the largest remaining intact tallgrass prairie in the Great Plains. Big bluestem,	0	618,385	0	618,385

Ecoregion Name	Common Vegetation Communities and Species	Amount in Study Area (acres)			
		AR	OK	TX	Total
	switchgrass, Indiangrass, and little bluestem are the dominant grasses.				
Ouachita Mountains	Once covered by oak-hickory-pine forests, most of this region is now in loblolly and shortleaf pine. The remaining hardwood forest species include southern red oak, black oak, post oak, white oak, and hickories.	825,922	2,589,828	0	3,415,750
Ozark Highlands	Oak-hickory and oak-hickory-pine forest stands are typical. Some savannas and tallgrass prairies were once common in the vegetation mosaic. Post oak, blackjack oak, black oak, white oak, hickories, shortleaf pine, little bluestem, Indiangrass, big bluestem, eastern red cedar glades.	0	1,511,438	0	1,511,438
South Central Plains	The natural vegetation of the region's uplands was historically dominated by longleaf pine woodlands and savannas in the south, and shortleaf pine/hardwood forests in the north. Southern red oak, post oak, white oak, hickories, and loblolly pine were common, with small areas of beech and magnolia in the south. Southern floodplain forest of water oak, willow oak, swamp chestnut oak, sweetgum, blackgum, red maple, bald cypress, and water tupelo typify bottomlands.	1,649,503	1,694,423	891,054	4,234,980
Texas Blackland Prairies	Historically, the region was a tallgrass prairie of little bluestem, big bluestem, yellow Indiangrass, tall dropseed, eastern gamagrass and many forbs, such as asters, clovers, and black-eyed susan. Almost the entire prairie has now been converted to other uses. Riparian areas have bur oak, Shumard oak, sugar hackberry, elm, ash, eastern cottonwood, and pecan.	0	0	701,725	701,725
Sources: U.S. Environmental Protection Agency 2016; Wiken et al. 2011					
AR = Arkansas; OK = Oklahoma; TX = Texas					

Table E-2. National Land Cover Database Definitions

Land Cover Class	Description
Barren Land	Areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits, and other accumulations of earthen material. Generally, vegetation accounts for less than 15 percent of total cover.
Cultivated Crops	Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.
Deciduous Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change.
Developed, High Intensity	Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80 percent to 100 percent of the total cover.
Developed, Low Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20 percent to 49 percent of total cover. These areas most commonly include single-family housing units.
Developed, Medium Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 percent to 79 percent of the total cover. These areas most commonly include single-family housing units.
Developed, Open Space	Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
Emergent Herbaceous Wetlands	Areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
Evergreen Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species maintain their leaves all year. Canopy is never without green foliage.
Grassland/Herbaceous	Areas dominated by graminoid or herbaceous vegetation, generally greater than 80 percent of total vegetation. These areas are not subject to intensive management such as tilling, but can be used for grazing.
Mixed Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of total tree cover.
Open Water	Areas of open water, generally with less than 25 percent cover of vegetation or soil.
Pasture/Hay	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.

Land Cover Class	Description
Shrub/Scrub	Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.
Woody Wetlands	Areas where forest or shrubland vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
Source: Homer et al. 2015.	

Table E-3. Invasive Plants Listed Under State Statute or Regulation in the Study Area

Scientific Name	Common Name	State
<i>Aeschynomene virginica</i>	Curly indigo	AR
<i>Agrostemma githago</i>	Corncockle	AR
<i>Alhagi camelorum</i>	Camelthorn	TX
<i>Allium</i> spp.	Wild onion and/or wild garlic	AR
<i>Alternanthera</i> spp.	Alligatorweed	AR, TX
<i>Arundo donax</i>	Giant reed	TX
<i>Bromus secalinus</i> or <i>B. commutatus</i>	Rye brome or meadow brome (cheat or chess)	AR
<i>Calonyction muricatum</i>	Moonflower	AR
<i>Calystegia sepium</i>	Hedge bindweed	AR, TX
<i>Cardiospermum halicacabum</i>	Balloonvine	AR, TX
<i>Carduus</i> , <i>Cirsium</i> , <i>Onopordum</i> , <i>Silybum</i> , <i>Scolymus</i> , <i>Salsola</i> , and other genera	Thistle	AR
<i>Carduus nutans</i>	Musk thistle	OK
<i>Cirsium arvense</i>	Canada thistle	OK
<i>Convolvulus arvensis</i>	Field bindweed	AR
<i>Crotalaria</i> spp.	Crotalaria	AR
<i>Cuscuta</i> spp.	Dodder	AR, TX
<i>Cynodon dactylon</i>	Bermudagrass	AR
<i>Cyperus rotundus</i>	Nut grass	AR
<i>Echinochloa crusgalli</i>	Barnyardgrass	AR
<i>Eichhornia azurea</i>	Rooted waterhyacinth	TX
<i>E. crassipes</i>	Waterhyacinth	TX
<i>Helianthus ciliaris</i>	Blueweed	AR
<i>Hydrilla verticillata</i>	Hydrilla	TX
<i>Imperata cylindrical</i>	Cogongrass	AR
<i>Ipomoea</i> spp.	Morning glory	AR
<i>I. aquatic</i>	Water spinach	TX
<i>Lagarosiphon major</i>	Lagarosiphon	TX
<i>Lolium temulentum</i>	Darnel	AR
<i>Lygodium japonicum</i>	Japanese climbing fern	TX

Scientific Name	Common Name	State
<i>Lythrum salicaria</i>	Purple loosestrife	AR, TX
<i>Melaleuca quinquenervia</i>	Paperbark	TX
<i>Melia azedarach</i>	Chinaberry	TX
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	TX
<i>Nassella trichotoma</i>	Serrated tussock	AR, TX
<i>Onopordum acanthium</i>	Scotch thistle	OK
<i>Orobanche ramosa</i>	Broomrape	TX
<i>Oryza sativa</i>	Red rice	AR
<i>Panicum repens</i>	Torpedograss	TX
<i>Pistia stratiotes</i>	Waterlettuce	TX
<i>Plantago aristata</i>	Bracted plantain	AR
<i>P. lanceolata</i>	Buckhorn plantain	AR
<i>Pueraria montana</i> var. <i>lobata</i>	Kudzu	TX
<i>Rottboellia exaltata</i>	Itchgrass	AR, TX
<i>Rumex</i> spp.	Dock, sorrel	AR
<i>Salvinia</i> spp.	Salvinia	TX
<i>S. molesta</i>	Giant salvinia	AR
<i>Schinus terebinthifolius</i>	Brazilian peppertree	TX
<i>Sesbania exaltata</i>	Tall indigo or coffee bean	AR
<i>Setaria faberi</i>	Giant foxtail	AR
<i>Solanum carolinense</i>	Horsenettle	AR
<i>S. elaeagnifolium</i>	Purple nightshade	AR
<i>S. viarum</i> dunal	Tropical soda apple	AR, TX
<i>Sorghum halapense</i>	Johnson grass	AR
<i>Spirodela oligorrhiza</i>	Giant duckweed	TX
<i>Striga</i> spp.	Witchweed	AR
<i>Tamarix</i> spp.	Saltcedar	TX
<i>Triadica sebifera</i>	Chinese tallow tree	TX
<i>Xanthium</i> spp.	Cocklebur	AR

Sources: Arkansas Administrative Rule 003.11.83-004; Oklahoma Administrative Code 800:20-1-2; Texas Administrative Code Title 4 §19.300(a).

AR = Arkansas; OK = Oklahoma; TX = Texas

Table E-4. Common or Typical Wildlife Species in the Study Area by Ecoregion

Ecoregion Name	Common or Typical Wildlife Species	State
Arkansas Valley	White-tailed deer, coyote, bobcat, swamp rabbit, beaver, raccoon, armadillo, wild turkey, mourning dove, box turtle	AR, OK
Boston Mountains	Black bear, white-tailed deer, coyote, red fox, gray fox, bobcat, beaver, skunk, mink, muskrat, gray squirrel, wild turkey, wood thrush, hooded warbler, box turtle, many sensitive fish species	AR, OK
Central Great Plains	White-tailed deer, mule deer, pronghorn, coyote, jackrabbit, cottontail rabbit, plains pocket mouse, sandhill crane, burrowing owl, prairie falcon, lark sparrow, Great Plains toad	OK
Central Irregular Plains	White-tailed deer, badger, raccoon, skunk, muskrat, cottontail rabbit, mink, Canada geese, bobwhite quail, western meadowlark, ring-neck pheasant	OK
Cross Timbers	White-tailed deer, bobcat, gray fox, raccoon, cottontail rabbit, black-tailed jackrabbit, prairie chicken, wild turkey, mourning dove, eastern meadowlark, lark sparrow, box turtle, and rattlesnake	OK
East Central Texas Plains	White-tailed deer, javelina, coyote, ring-tail cat, raccoon, opossum, bobcat, armadillo, jackrabbit, cottontail rabbit, Cooper's hawk, mockingbird, scaled quail, white-winged dove, mourning dove	OK, TX
Flint Hills	White-tailed deer, coyote, bobcat, red fox, badger, raccoon, cottontail rabbit, fox squirrel, plains pocket gopher, prairie vole, meadowlarks, Cooper's hawk	OK
Ouachita Mountains	White-tailed deer, black bear, coyote, bobcat, gray fox, gray squirrel, muskrat, mink, eastern fox squirrel, pine vole, wild turkey, wood thrush, red-eyed vireo, Carolina wren, box turtle, timber rattlesnake, Fourche Mountain salamander	AR, OK
Ozark Highlands	White-tailed deer, coyote, bobcat, beaver, gray bat, wild turkey, eastern bluebird, bobwhite, warblers, collared lizard, many salamanders	AR, OK
South Central Plains	White-tailed deer, coyote, beaver, raccoon, muskrat, mink, river otter, swamp rabbit, cottontail rabbit, armadillo, mourning dove, white ibis, Mississippi kite	AR, OK, TX
Texas Blackland Prairies	Coyote, ringtail cat, armadillo, raccoon, skunk, cottontail rabbit, plains pocket gopher, turkey vulture, lark sparrow, northern cardinal, mourning dove	TX
Source: Wiken et al. 2011.		
AR = Arkansas; OK = Oklahoma; TX = Texas		

Table E-5. Migratory Birds of Conservation Concern that Occur or Have the Potential to Occur in Study Area

Species	Season
Acadian flycatcher (<i>Empidonax virescens</i>)	Breeding
American bittern (<i>Botaurus lentiginosus</i>)	Wintering
American kestrel (<i>Falco sparverius paulus</i>)	Year-round
Bachman's Sparrow (<i>Peucaea aestivalis</i>)	Year-round
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Year-round
Bell's vireo (<i>Vireo bellii</i>)	Breeding
Bewick's wren (<i>Thryomanes bewickii</i> ssp. <i>bewickii</i>)	Year-round
Black-crowned night-heron (<i>Nycticorax nycticorax</i>)	Breeding
Blue-winged warbler (<i>Vermivora pinus</i>)	Breeding
Brown-headed nuthatch (<i>Sitta pusilla</i>)	Year-round
Burrowing owl (<i>Athene cunicularia</i>)	Breeding
Cassin's sparrow (<i>Peucaea cassinii</i>)	Breeding
Cerulean warbler (<i>Dendroica cerulea</i>)	Breeding
Chestnut-collared longspur (<i>Calcarius ornatus</i>)	Wintering
Chuck-will's-widow (<i>Caprimulgus carolinensis</i>)	Breeding
Dickcissel (<i>Spiza americana</i>)	Breeding
Field sparrow (<i>Spizella pusilla</i>)	Year-round
Fox sparrow (<i>Passerella iliaca</i>)	Wintering
Golden eagle (<i>Aquila chrysaetos</i>)	Wintering
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	Breeding
Harris's sparrow (<i>Zonotrichia querula</i>)	Wintering
Henslow's sparrow (<i>Ammodramus henslowii</i>)	Breeding, Wintering
Hudsonian godwit (<i>Limosa haemastica</i>)	Migrating
Kentucky warbler (<i>Oporornis formosus</i>)	Breeding
Lark bunting (<i>Calamospiza melanocorys</i>)	Breeding, Wintering
Le Conte's sparrow (<i>Ammodramus leconteii</i>)	Wintering
Least bittern (<i>Ixobrychus exilis</i>)	Breeding
Lesser yellowlegs (<i>Tringa flavipes</i>)	Wintering
Lewis's woodpecker (<i>Melanerpes lewis</i>)	Wintering
Little blue heron (<i>Egretta caerulea</i>)	Breeding
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Year-round
Long-billed curlew (<i>Numenius americanus</i>)	Breeding
Louisiana waterthrush (<i>Parusia motacilla</i>)	Breeding
Mississippi kite (<i>Ictinia mississippiensis</i>)	Breeding
Northern flicker (<i>Colaptes auratus</i>)	Year-round
Orchard oriole (<i>Icterus spurius</i>)	Breeding
Painted bunting (<i>Passerina ciris</i>)	Breeding
Pied-billed grebe (<i>Podilymbus podiceps</i>)	Year-round
Prairie warbler (<i>Dendroica discolor</i>)	Breeding

Species	Season
Prothonotary warbler (<i>Protonotaria citrea</i>)	Breeding
Red-headed woodpecker (<i>Melanerpes erythrocephalus</i>)	Year-round
Rufous-crowned sparrow (<i>Aimophila ruficeps</i>)	Year-round
Rusty blackbird (<i>Euphagus carolinus</i>)	Wintering
Scissor-tailed flycatcher (<i>Tyrannus forficatus</i>)	Breeding
Sedge wren (<i>Cistothorus platensis</i>)	Migrating
Short-eared owl (<i>Asio flammeus</i>)	Wintering
Snowy plover (<i>Charadrius alexandrinus</i>)	Breeding
Sprague's pipit (<i>Anthus spragueii</i>)	Wintering
Swainson's hawk (<i>Buteo swainsoni</i>)	Breeding
Swainson's warbler (<i>Limnothlypis swainsonii</i>)	Breeding
Upland sandpiper (<i>Bartramia longicauda</i>)	Breeding
Willow flycatcher (<i>Empidonax traillii</i>)	Breeding
Wood thrush (<i>Hylocichla mustelina</i>)	Breeding
Worm-eating warbler (<i>Helmitheros vermivorum</i>)	Breeding

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Appendix F

Visual Resources

Appendix F

Visual Resources

This appendix contains additional material that supports EIS Section 3.7, *Visual Resources*, including the following:

- Viewshed Sensitive Features in Study Area by Jurisdiction and State (Table F-1)
- Descriptions of Physiographic Provinces in the Study Area

Table F-1. Viewshed Sensitive Features in the Study Area by Jurisdiction and State

Sensitive Federal Lands		
Holla Bend National Wildlife Refuge	Boggy Depot	Deep Fork National Wildlife Refuge
Pond Creek National Wildlife Refuge	Kenwood Indian Reservation	Little River National Wildlife Refuge
Fort Smith National Historic Site	Arcadia Lake	Ozark Plateau National Wildlife Refuge
President William Jefferson Clinton Birthplace Home National Historic Site	Birch Lake	Sequoyah National Wildlife Refuge
Fort Smith National Historic Site	Broken Bow Lake	Tishomingo National Wildlife Refuge
ACEP-WRE _Sebastian	Copan Lake	Fort Smith National Historic Site
Blue Mountain Recreation Area	Eufaula Lake	Chickasaw National Recreation Area
Dardanelle Recreation Area	Fort Gibson Lake	Chickasaw National Recreation Area
J.P. Hammerschmidt Recreation Area	Heyburn Lake	WRP_Atoka, OK (40005)
Millwood Recreation Area	Hugo Lake	Tonkawa Tribe Trust Land
Nimrod Recreation Area	Hulah Lake	Camp Gruber
Ozark Recreation Area	Kaw Lake	McAlester AAP
Blue Mountain Lake	Keystone Lake	Tinker Air Force Base
Dardanelle Lake	Oologah Lake	Tinker Support Annex
DeGray Lake	Pine Creek Lake	Thlopthlocco Tribal Town (Creek)
DeGray Reservoir	Robert S. Kerr Lake	Hurricane Creek, Arkansas National Wild and Scenic River
Millwood Lake	Sardis Lake	Mulberry River, Arkansas National Wild and Scenic River
Nimrod Lake	Skiatook Lake	Hurricane Creek, Arkansas National Wild and Scenic River
Ozark Lake	Tenkiller Ferry Lake	Absentee-Shawnee Tribe Trust Land
Robert S. Kerr Lake	Wister Lake	Eastern Shawnee Tribe Trust Land
Blue Mountain	Beech Creek	Iowa Tribe Trust Land
Devils Canyon	Rich Mountain	Kaw Nation Trust Land
Gee Creek	Beech Creek National Botanical Area	Kickapoo Tribe Trust Land
Indian Creek	Robert S. Kerr National Botanical Area	Otoe-Missouria Tribe Trust Land
Black Mountain National Game Refuge	Indian Nations National Scenic And Wildlife Area	Ottawa Tribe Trust Land
Haw Creek National Game Refuge	Winding Stair Mountain National Recreation Area	Pawnee Indian Tribe Trust Land
Pigeon Creek National Game Refuge	Beech Creek National Scenic Area	Peoria Tribe Trust Land
Ouachita National Forest	Tiak	Ponca Tribe Trust Land
Ozark-St. Francis National Forest	Black Fork Mountain Wilderness	Quapaw Tribe Trust Land

Region 08 National Forest	Upper Kiamichi River Wilderness	Sac and Fox Nation Trust Land
Ouachita National Wildlife Refuge	Little River National Wildlife Refuge	Seneca-Cayuga Tribe Trust Land
Black Fork Mountain Wilderness	Wright Patman Recreation Area	Deep Fork National Wildlife Refuge
Dry Creek Wilderness	Pat Mayse Lake	Ozark Plateau National Wildlife Refuge
Hurricane Creek Wilderness	Wright Patman Lake	Mulberry River, Arkansas National Wild and Scenic River
Poteau Mountain Wilderness	Tulsa IAP	Big Piney Creek, Arkansas National Wild and Scenic River
Sensitive State Lands - Arkansas		
Cherokee Prairie Natural Area	Ozan	Ozark Plateau Wildlife Management Area
Dardanelle Rock Natural Area	Petit Jean	Old Washington Historic State Park
H.E. Flanagan Prairie Natural Area	Rick Evans Grandview Prairie	De Gray State Park
Nacatoch Ravines Natural Area	Sulphur River	Lake Dardanelle State Park
Terre Noire Natural Area	Nimrod State Game Management Area	Lake Fort Smith State Park
White Cliffs Natural Area	Bois D'arc	Millwood State Park
Rest Area / Wayside Park	Galla Creek	Mount Nebo State Park
Wayside Park	Hope Upland	Little River
Blevins		
Sensitive State Lands - Oklahoma		
Oliver's Woods	Disney State Park	Schooler Public Fishing Area
OSU McPherson Preserve	Dog Iron Ranch & Will Rogers Birthplace	Skiatook Wildlife Management Area
Arcadia Conservation Education Area	Greenleaf State Park	Sparrowhawk Wildlife Management Area
Atoka Public Hunting Area	Hochatown State Park	Spavinaw Game Management Area
Atoka Wildlife Management Area	Honey Creek State Park	Spavinaw Public Hunting Area
Blue River Public Fishing & Hunting Area	Hugo Lake State Park	Stringtown Wildlife Management Area
Broken Bow Wildlife Management Area	Keystone State Park	Tenkiller Wildlife Management Area
Candy Creek Wildlife Management Area	Lake Eufula State Park	Texoma/Washita Arm Wildlife Management Area
Cherokee Game Management Area	Lake Tenkiller State Park	Tishomingo Wildlife Management Unit
Cherokee Public Hunting Area	Lake Thunderbird State Park	Whitegrass Flats Wildlife Management Area
Chickasaw National Recreation Area	Mcgee Creek State Park	Wister Wildlife Management Area & Waterfowl Refuge
Cookson Wildlife Management Area	Natural Falls State Park	Yourman Wildlife Management Area
Copan Wildlife Management Area	Okmulgee/dripping State Park	Arrowhead State Park
Cross Timbers Wildlife Management Area	Osage Hills State Park	Bernice State Park
Deep Fork Wildlife Management Area	Pawnee Bill Museum State Park	Boswell State Park

Eufaula Wildlife Management Area	Raymond Gary State Park	Cherokee Landing State Park
Fobb Bottom Wildlife Management Area	Sequoyah Bay State Park	Cherokee State Park
Fort Gibson Public Hunting Area & Waterfowl Refuge Portion	Snowdale State Park	Clayton Lake State Park
Gary Sherrer Wildlife Management Area	State Parkavinaw State Park	McGee Creek Wildlife Management Area
Grassy Slough Wildlife Management Area	Twin Bridges State Park	Nanah Waiya Public Fishing Area
Heyburn Wildlife Management Area	Walnut Creek State Park	Okmulgee Game Management Area
Hickory Creek Wildlife Management Area	Wister State Park	Okmulgee Public Hunting Areaa
Honobia Creek Wildlife Management Area	Beavers Bend State Resort Park	Oologah Wildlife Management Area
Hugo Wildlife Management Area	Lake Murray State Resort Park	Osage Wildlife Management Area
Hulah Wildlife Management Area	Lake Texoma State Resort Park	Ozark Plateau Wildlife Management Area
James Collins Wildlife Management Area	Robbers Cave State Resort Park	Ozzie Cobb Public Fishing Area
John Dahl Wildlife Management Area	Western Hills Guest Ranch/Sequoia Sp State Resort	Pine Creek Wildlife Management Area
Kaw Wildlife Management Area	Robbers Cave Wildlife Management Area	Pushmataha Wildlife Management Area
Keystone Wildlife Management Area	McClellan Kerr Wildlife Management Area	Raymond Gary Public Fishing Area
Lexington Wildlife Management Area	McCurtain County Wilderness Area	Red Slough Wildlife Management Area & Waterfowl Refuge Portion
Love Valley Wildlife Management Area	Lower Illinois River Public Fishing and Hunting Area	
Sensitive State Lands - Texas		
Sam Bell Maxey House State Historic Site	Bonham State Park	Sulphur River
Sensitive Local Lands - Arkansas		
Boston Mountains Fee	WRP Crawford	WRP Sebastian
Cherokee Prairie East Fee	WRP Franklin	WRP Yell
Lee Creek - Devils Den Karst Fee	WRP_Hempstead	Fort Smith
Miller County Sandhill Fee	WRP_Johnson	Nacatoch Ravines Natural Area
Mulberry River Site Fee	WRP_Little River	GRP_Little River
Nacatoch Ravines Fee	WRP Miller	WRP Bowie
Terre Noire Fee	GRP_Hempstead	EWPP-FPE_Yell
Sensitive Local Lands - Oklahoma		
Redbud Valley Nature Preserve	Wyckoff	WRP Kay
Heavener Runestone Park	Bridgestone	WRP_Latimer
Martin Park Nature Center	Northwest Passage	WRP_Le Flore
Stinchcomb Wildlife Refuge	Osage Trail (Barnsdall)	WRP_Lincoln
Brushy Lake Park	Powell Trail (River Parks)	WRP Love
Lake Eucha Park	Sivadon / AAP	WRP Mayes
Lake Hefner	Tomsen	WRP_McCurtain
Lake Overholser	EWPP-FPE_Bryan	WRP_McIntosh
Lake Stanley Draper	GRP_Craig	WRP_Muskogee
Turner Falls Park	GRP Haskell	WRP Noble

Lake Hefner	GRP_Kay	WRP_Nowata
Lake Overholser	GRP_Nowata	WRP_Okfuskee
Lake Stanley Draper	GRP_Osage	WRP_Okmulgee
Mohawk Park	WRP_Adair	WRP_Osage
Adair Park	WRP_Atoka	WRP_Ottawa
Keystone Ancient Forest	WRP_Bryan	WRP_Pawnee
Chitwood	WRP_Cherokee	WRP_Payne
FRPP Johnston(40069)	WRP Choctaw	WRP Pittsburg
Greater Flint Hills Easement	WRP_Craig	WRP_Pottawatomie
Keystone Woodlands Easement	WRP_Creek	WRP_Red River
Pennington Creek Easement	WRP_Garvin	WRP_Rogers
Rich Mountain Easement	WRP_Haskell	WRP_Washington
US-OK-40-1	WRP_Hughes	HFRP Adair
White Oak Prairie Easement	Nickel 11	HFRP_Delaware
Driskill	Nickel 12	Camp Classen YMCA
Melton - Forest Park	Nickel 13	Camp Lutherhoma
Preservation District	Pontotoc Ridge Fee	Sportsman Lake Recreation Area
Wild Mountain	Redbud Valley Restriction	Kerr Center For Sustainable Agriculture
Northwest Passage F-1	Rich Mountain Fee	Ray Thompson
Northwest Passage F-2	Tulsa Least Tern Nesting Area Fee	Valley Park (Tract A)
Northwest Passage P-1	White Oak Prairie Fee	Valley Park (Tract B)
Pedestal Oil	Brewster	Greater Flint Hills
Tulsa Audubon Society Bald Eagle Preserve	James Harrison	Greater Flint Hills Agreement
Blue River Fee	Mull (N. Tract)	Greater Flint Hills Fee
Boehler Seeps And Sandhills Fee	Mull (S. Tract)	Greater Flint Hills Lease
Brave Heirs	Perkins	Greater Flint Hills Restriction
Cookson Hills Fee		
Sensitive Local Lands - Texas		
Lake Crook	Scott Joplin Park	GRP_Bowie
Lake Gibbons	Simpson Park	GRP_Lamar
Gambill Goose Refuge	Spring Lake Park	WRP_Bowie
Bell Park	Stephenson Park	WRP_Delta
Beverly Park	T & P Trailhead Park	WRP_Fannin
Bringle Lake Park	Wade Park	WRP_Lamar
ByWaters Park	Walker Park	WRP_Lamar
Catron Park	Lennox Woods Fee	WRP_Red River
Cubertson Park	Tridens Prairie Fee	Leon Williams Park
Ferguson Park	Karrh Park	Oak Park
Findley Street Park	Kidtopia	Grady T. Wallace Park
Lake Bonham Recreation Park	Heritage Park	

Source: U.S. Geological Survey 2016

ACEP-WRE = Agricultural Conservation Easement Program – Wetland Reserve Enhancement; WRP = Wetland Reserve Program; AAP = Army Ammunition Plan; IAP=International Airport; OSU = Oklahoma State University; GRP = Grassland Reserve Program; EWPP-FPE = Emergency Watershed Protection Plan – Floodplain Easement; FRPP = Farm and Ranch Lands Protection Plan; HFRP = Healthy Forests Reserve Program; YMCA = Young Men’s Christian Association.

Physiographic Provinces in the Study Area

Central Lowlands Province

Landforms in this region of Oklahoma within the Plan Area are of slight relief with flat and smooth topography (with the exception of the Arbuckle Mountains). Natural vegetation includes eastern hardwood forest, floodplain forest, mixed grass prairie, tall grass prairie, and tall grass savanna. Cultural vegetation includes residential plantings, orchards, hedgerows, hay/pastures, and cultivated crops. Major reservoirs, lakes, and rivers with viewing opportunities include Atoka Reservoir, Copan Lake, Grand Lake of the Cherokees, Greenleaf Lake, Hulah Lake, Kaw Lake, Keystone Lake, Lake Eufaula, Lake Murray, Oolaga Reservoir, Skiatook Lake, the Arkansas River, the Little River, and the Spring River. Population centers include Norman, Oklahoma City, Stillwater, and Tulsa and their suburbs, and numerous towns and villages. The province is intersected by Interstates 35, 40 (Historic Route 66) and 44, U.S. Highways 69, 75, and 412, and numerous state and local highways and roads. Figure F-1 provides an example of a common landscape of the Central Lowlands Province.

Figure F-1. Common Landscape of the Central Lowlands Province



Source: Google Earth 2017

Coastal Plain Province

Landforms of this region of Arkansas, Oklahoma, and Texas within the Plan Area are unvaried with extremely flat topography (with the exception of the Caddo Hills), and areas of finely dissected slopes. Natural vegetation includes eastern hardwood forest, floodplain forest, southern mixed forest, tall grass prairie, and tall grass savanna. Cultural vegetation includes residential plantings,

orchards, hedgerows, pastures, and field crops. Major reservoirs, lakes, and rivers with viewing opportunities include Hugo Lake, Lake Texoma, McGee Creek Reservoir, Pat Mayse Lake, South Lake, Wright Patman Lake, and the Sulphur River. Population centers include Arkadelphia, Paris, Texarkana, and several towns and villages. The province is intersected by Interstate 10, U.S. Highways 69, 70, 75, 82, 271, and 377, and numerous state and local highways and roads. Figure F-2 provides an example of a common landscape of the Coastal Plain Province.

Figure F-2. Common Landscape of the Coastal Plain Province



Source: Google Earth 2017

Ouachita Province

Landforms of this region of Arkansas and Oklahoma within the Plan Area consist of numerous mountains and mountain ranges, which are typified by linear escarpments and moderate to steep topography. Natural vegetation includes eastern hardwood forest, floodplain forest, southern mixed forest, and tall grass savanna. Cultural vegetation includes residential plantings, orchards, hedgerows, pastures, and field crops. Major reservoirs, lakes, and rivers with viewing opportunities include Blue Mountain Lake, DeGray Lake, Lake Dardanelle, Lake Hinkle, Nimrod Lake, Robert S. Kerr Reservoir, Tenkiller Lake, Wister Lake, the Arkansas River, the Canadian River, and the Poteau River. Population centers include Clarksville, Fort Smith, Muskogee, Van Buren, and numerous towns and villages. The province is intersected by Interstates 40 and 540, U.S. Highways 71 and 59, and numerous state and local highways and roads. Figure F-3 provides an example of a common landscape of the Ouachita Province.

Figure F-3. Common Landscape of the Ouachita Province

Source: Google Earth 2017

Ozark Plateaus Province

Landforms of this region of Arkansas and Oklahoma within the Plan Area are thoroughly dissected with numerous steep mountains and mountain ranges and narrow valley floors. Natural vegetation includes eastern hardwood forest, southern mixed forest, and tall grass savanna. Cultural vegetation includes residential plantings, orchards, hedgerows, pastures, and field crops. Major reservoirs, lakes, and rivers with viewing opportunities include Fort Gibson Reservoir, Lake Eucha, Lake Fort Smith, Tenkiller Lake, and the Neosho River. Population centers include Fort Gibson, Grove, Muskogee, Tahlequah, and numerous towns and villages. The province is intersected by Interstate 540, U.S. Highways 71, 59, and 412, and numerous state and local highways and roads. Figure F-4 provides an example of a common landscape of the Ozark Plateaus Province.

Figure F-4. Common Landscape of the Ozark Plateaus Province



Source: Google Earth 2017

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

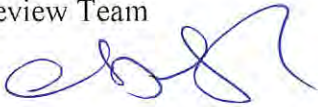


Post Office Box 1306
Albuquerque, New Mexico 87103

In Reply Refer To:
FWS/R2/ES-ER/FR003361

Memorandum

To: National Environmental Policy Act Review Team

From: Regional Director, Southwest Region 

Subject: Clearance Request to Publish the draft Environmental Impact Statement Notice of Availability on the proposed American Electric Power American Burying-beetle Habitat Conservation Plan in Oklahoma, Arkansas and Texas

This memorandum provides materials and information on the subject National Environmental Policy Act analysis being undertaken for American Electric Power's (AEP) American Burying-beetle (ABB) Habitat Conservation Plan (HCP) in Oklahoma, Arkansas and Texas. Region 2 seeks clearance to publish the draft Environmental Impact Statement (dEIS) Notice of Availability and open the public review and comment period on the permitting decision which AEP's HCP supports.

Proposed Action

The Applicant requests a 30-year Incidental Take Permit (ITP) under the Endangered Species Act (ESA), section 10(a)(1)(B), to address likely ABB take in Oklahoma, Arkansas and Texas. The HCP plan area includes the locations where authorized incidental take would occur and conservation measures would take place. The plan area includes Oklahoma and Arkansas counties within known ABB range and Texas counties with ABB occurrence records. The plan area also includes counties in these states where ABB range could expand over the permit term. In total, the plan area includes almost 32 million acres. The covered activities include AEP's electrical line and support facilities repair, maintenance and construction (e.g., substations and switching facilities) within the plan area, as well as activities carried out as part of the HCP's conservation strategy. These covered activities may result in impacts to approximately 6,713 acres of occupied ABB habitat over the ITP term.

Preliminary Purpose and Need

This Federal action's purpose is to address the ITP application to authorize taking Federally-listed ABB for AEP's Covered Activities in the Plan Area. The HCP must provide the information necessary to obtain an ITP under the ESA. The Federal action is necessary to provide AEP a mechanism to comply with ESA ABB and ABB habitat protection and conservation, while allowing current and future AEP Covered Activities in the Plan Area where effects that rise to the take level are unavoidable.

Project Completion Challenges

This is a programmatic HCP, so specific sites are generally unknown at this time. The HCP provide AEP a streamlined ESA compliance process in the permit area.

The Wind Catcher Energy Transmission Line is one of AEP's most urgent needs (they have several projects on hold awaiting a permit decision). Possible controversy over the Wind Catcher Project may include environmental impacts to playa lakes, migratory birds, eagles, two ESA-listed birds, and other wildlife. There are ongoing commission proceedings regarding the Wind Catcher Project, which is typical for this type and size of project. The AEP is actively conducting public outreach on Wind Catcher.

Elected and Appointed Officials' Perspectives

We notified congressionals, governors, state wildlife agencies, and other officials when the notice of intent to prepare a dEIS published. Generally, they support AEP providing reliable power to themselves and their constituents.

Tribal Perspectives

During NEPA scoping we notified 38 Federally-recognized Native American Tribes. Interested parties support the proposed HCP and permit issuance. We will continue consulting with the Federally-recognized tribes throughout the application process.

Applicability to Fixing America's Surface Transportation Act or One Federal Decision

Other relevant considerations: This permit application is for a program of work on electrical transmission infrastructure that would meet the Department and Administration priorities for both energy and infrastructure (Fixing America's Surface Transportation Act (FAST-41). Other Federal agencies are part of the planning process, so the dEIS will support One Federal Decision.

Estimated Notice of Availability Publication Date

June 29, 2018

DRAFT ENVIRONMENTAL IMPACT STATEMENT

**FOR THE DRAFT AMERICAN ELECTRIC POWER
AMERICAN BURYING-BEETLE HABITAT CONSERVATION
PLAN IN OKLAHOMA, ARKANSAS, AND TEXAS**

VOLUME I: CHAPTERS 1-7

U.S. Fish and Wildlife Service
Southwest Region
Albuquerque, NM

March 2018

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1.1 Introduction

State or local governments, private landowners, corporations, or other non-federal landowners who wish to conduct activities on their land that might incidentally take wildlife listed as endangered or threatened under the federal Endangered Species Act (ESA) (16 United States Code [U.S.C.] §§ 1531 to 1544) must implement measures to avoid impacts on those species, obtain a section 10(a)(1)(B) incidental take permit (ITP) from the U.S. Fish and Wildlife Service (Service), or risk violating the ESA. As defined in ESA Section 3(19), “take” of listed endangered or threatened species means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

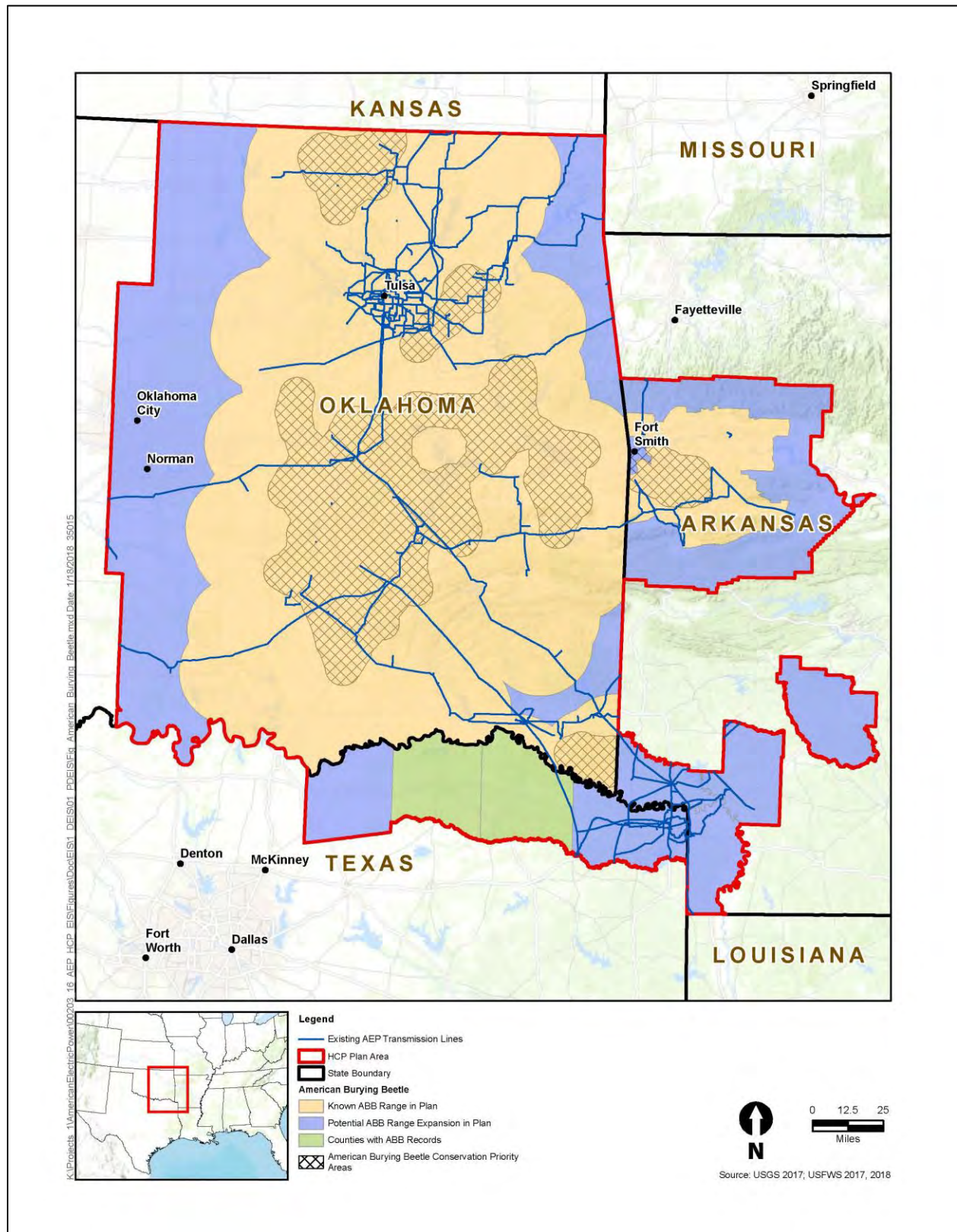
We are considering issuing an ITP for the draft *American Electric Power Habitat Conservation Plan for American Burying Beetle in Oklahoma, Arkansas, and Texas* (HCP). The American Electric Power System (AEP or Applicant)¹ prepared the HCP to address incidental take of the endangered American burying beetle (*Nicrophorus americanus*; ABB) from AEP’s maintenance, operation, and expansion of its electrical facilities. American Electric Power is one of the largest electric utilities in the country with an electric system that includes transmission lines, substations, switching stations, and a distribution network. American Electric Power’s ability to serve its customers depends on the timely installation, operation, and maintenance of its electric facilities.

The *Plan Area* for the HCP includes areas where authorized incidental take would occur and conservation measures would take place. The Plan Area includes Oklahoma and Arkansas counties within known ABB range and Texas counties with ABB occurrence records. The Plan Area also includes counties in these states where ABB’s range could expand over the permit term. In total, the Plan Area amounts to almost 32 million acres (Figure 1-1).

Covered Activities under the HCP include AEP’s repair, maintenance, and construction activities for electrical lines and support facilities (e.g., substations and switching facilities) within the Plan Area, as well as activities carried out as part of the HCP’s conservation strategy. These Covered Activities may result in impacts that lead to take of ABB, as defined under the ESA.

The proposed ITP term is 30 years, which AEP chose because it provides a reasonable planning horizon to implement the Covered Activities and to realize the cost savings from HCP implementation as compared to the cost of preparing the HCP. A 30-year time period also allows for the full implementation and evaluation of the conservation strategy, including monitoring and adaptive management. AEP could apply to renew or amend the HCP and extend the ITP prior to the permit expiring.

¹ American Electric Power Service Corporation or AEPSC, a subsidiary of American Electric Power Company, Inc., is the applicant as agent for the operating company subsidiaries and affiliated companies of the AEP system.

1 **Figure 1-1. HCP Plan Area**

Under the Council on Environmental Quality (CEQ) regulations at 40 CFR part 1501.6, as the lead federal agency for preparing the environmental impact statement (EIS), we requested the participation of three Federal agencies and two state agencies as cooperating agencies in preparing this EIS. Five entities accepted cooperating agency status, including the Bureau of Indian Affairs Southern Plains; Office of Surface Mining Reclamation and Enforcement; Arkansas Army National Guard – Fort Chaffee Joint Maneuver Training Center; Texas Army National Guard Environmental Branch; and U.S. Army – McAlester Army Ammunition Plant. These cooperating agencies all have jurisdiction by law or special expertise related to the proposed action based on the ABB habitat present on their property or within their jurisdiction. The cooperating agencies may issue decisions concerning us issuing an ITP and intend to use this EIS for the disclosure and analysis of potential environmental impacts related to those decisions.

We prepared this EIS according to the requirements of the National Environmental Policy Act (42 U.S.C. §§ 4321–4370, et seq; NEPA), CEQ NEPA-implementing regulations (40 Code of Federal Regulations [CFR] 1500–1508), the U.S. Department of the Interior’s NEPA Procedures (43 CFR 46), our 2016 *Habitat Conservation and Planning and Incidental Take Permit Processing Handbook*, and other Service guidance for compliance with those regulations. Additional information on the proposed action, including a copy of this EIS, is available on our Oklahoma Ecological Services Field Office’s website (<https://fws.gov/southwest/es/Oklahoma/>).

1.2 Proposed Federal Action

The proposed federal action being evaluated in this EIS is our approval of AEP’s HCP and issuance of an ITP under Section 10(a)(1)(B) of the ESA. The ITP would authorize incidental take of the ABB that could result from Covered Activities in the Plan Area over the 30-year term of the ITP.

The purpose and need for issuing an ITP are described below. Chapter 2, *Alternatives*, provides a detailed description of the Plan Area, Covered Activities, the conservation strategy for the ABB, and a description of alternatives to the proposed action.

1.3 Purpose and Need and Decision to be Made for Federal Action

The purpose of the federal action is to address the application for an ITP to authorize take of the federally listed ABB for AEP’s Covered Activities in the Plan Area. Covered Activities are described fully in Chapter 2, *Alternatives*. The HCP must provide the information necessary to obtain an ITP under the ESA. The need for the federal action is to provide AEP with a mechanism to comply with the ESA protection for, and conservation of, ABB and its habitat, while allowing current and future AEP Covered Activities in the Plan Area where effects that rise to the level of take cannot be avoided.

The purpose and need establish the basis for determining whether other viable alternatives to issuing an ITP may meet the intended purpose and reduce potential effects from the ITP. Section 10 of the ESA specifically directs the Service to issue ITPs to non-federal entities for take of endangered and threatened species when the applicant satisfies the criteria in section 10(a)(2)(B). Once we

1 receive an application for an ITP, we review the application to determine if it meets issuance
2 criteria.

3 Our decision on whether to issue an ITP to AEP will be based on the statutory and regulatory criteria
4 of the ESA. In applying these criteria, we will analyze the effects of Covered Activities on ABB, as well
5 as the effectiveness of the proposed conservation strategy in avoiding, minimizing, and mitigating
6 impacts on the species. We will make our determination after the public has had an opportunity to
7 comment on the Draft and the Final EIS and HCP. We will document our determination in an ESA
8 Section 10 findings document, ESA Section 7 Biological Opinion, and NEPA Record of Decision (ROD)
9 developed at the conclusion of the NEPA and ESA compliance processes. Under the ESA, the Service
10 may implement one of the following options in evaluating an application for an ITP under Section
11 10(a)(1)(B).

- 12 • Issue an ITP conditioned on implementation of the HCP.
- 13 • Issue an ITP conditioned on implementation of the HCP and other specified measures.
- 14 • Deny the ITP application.

15 For more information about the regulatory setting for this action, please see Appendix C.

16 **1.4 Scope of Analysis**

17 A basic tenant of the proposed action—issuance of the ITP and subsequent implementation of the
18 HCP—is that the Service does not directly authorize AEP’s activities that may cause take of Covered
19 Species. An ITP from the Service provides an applicant with incidental take authorization under the
20 ESA, and requires the applicant to obtain any other necessary construction or operation-related
21 permits from other entities, as necessary.

22 American Electric Power’s operations, maintenance, and construction activities within the Plan Area
23 are typically authorized by other federal, state, county, and local agencies or ordinances, depending
24 on their location (i.e., which state or county they are located in) and site-specific resource
25 constraints (e.g., proximity to sensitive noise or visual resource receptors). In this case, issuance of
26 an ITP could facilitate development by addressing one of the various statutory and regulatory
27 requirements tied to project authorization, but would not unilaterally approve such development.

28 Accordingly, the scope of the analysis of the EIS is focused principally on the direct, indirect, and
29 cumulative impacts of the proposed Covered Activities anticipated to result in incidental take of
30 ABB, as well as any impacts associated with implementing the conservation strategy (i.e., avoidance
31 and minimization measures [AMMs], mitigation measures, and monitoring actions) provided in the
32 HCP. The EIS is more detailed in its analyses of species and species habitats than for other aspects of
33 the human environment (e.g., air quality, transportation, noise), given the direct relationship
34 between issuing an ITP and effects on wildlife species and their habitat. Potential impacts on other
35 resource areas are discussed at a more programmatic level to reflect the indirect nature of the
36 proposed action, the geographic breadth of the Plan Area, and the lack of information on the precise
37 location and timing of Covered Activities.

1.5 Scoping

We initiated the public scoping process with publication of the Notice of Intent (NOI) in the Federal Register on January, 19, 2017 (82 FR 6625). The NOI announced our intent to prepare an EIS, provided the details on four public meetings, and requested comments from all interested parties on the scope of issues and alternatives to consider when drafting the EIS. A copy of the NOI is included in Appendix D of this EIS and is also available on our Oklahoma Ecological Services Field Office website (<https://fws.gov/southwest/es/Oklahoma/>). The scoping meetings were held at the following locations and on the indicated dates and times.

- February 6, 2017; 5:30–7:30 p.m.; Eastern Oklahoma State College, McAlester Campus Conference Center, 1802 E College Avenue, McAlester, OK 74501
- February 7, 2017; 5:30–7:30 p.m.; Texarkana College, Levi Hall Conference Room, 2500 North Robison Road, Texarkana, TX 75599
- February 8, 2017; 5:30–7:30 p.m.; River Park Events Building, West Room, 121 Riverfront Drive, Fort Smith, AR 72901
- February 9, 2017; 5:30–7:30 p.m.; Central Center Auditorium, 1028 East 6th Street, Tulsa, OK 74120

We received three written comments during the scoping period: one from a federal agency, one from a tribal organization, and one from a state agency. The comment from the tribal organization did not have any comments on the ITP or NEPA process, but requested a copy of the EIS once it is available. Copies of these three written comments are included in Appendix D. The comments and input obtained during the scoping period were considered in developing this EIS.

1.6 Draft Environmental Impact Statement Public Comment Period

All members of the public, including any interested parties, are encouraged to submit comments on all aspects of this Draft EIS. The HCP is concurrently released for public review and comment. We will consider all comments on the Draft EIS in preparing the Final EIS, which will include responses to substantive comments received. All comments on this Draft EIS must be submitted within the published comment period, which will close 60 days after the U.S. Environmental Protection Agency Notice of Availability of the Draft EIS is published in the *Federal Register*. We encourage commenters to be as specific as possible and to substantiate concerns and recommendations when submitting comments on this Draft EIS.

Comments on the Draft EIS may be submitted in one of the following ways.

- Electronically:* Go to the Federal e-Rulemaking Portal: <http://www.regulations.gov>. In the Search box, enter **FWS–R2–ES–2017–0105**, which is the docket number for this notice. On the left side of the screen, under the Document Type heading, click on the Notices link to locate this document and submit a comment.
- By Hard Copy:* Submit by U.S. mail or hand-delivery to Public Comments Processing, Attn: **FWS–R2–ES–2017–0105**; U.S. Fish and Wildlife Service Headquarters, MS: BPHC; 5275 Leesburg Pike, Falls Church, VA 22041–3803.

- We will also accept written and oral comments at the public meetings (see **DATES** and **Public Meetings**).

We will host four in-person public meetings during the public comment period:

- **Month DD, 2018**; 5:30–7:30 p.m.; Eastern Oklahoma State College, McAlester Campus Conference Center, 1802 E College Avenue, McAlester, OK 74501
- **Month DD, 2018**; 5:30–7:30 p.m.; Texarkana College, Levi Hall Conference Room, 2500 North Robison Road, Texarkana, TX 75599
- **Month DD, 2018**; 5:30–7:30 p.m.; **Fort Smith Public Library**, Cohn-Arendt Meeting Room, 3201 Rogers Avenue, Fort Smith, AR 72903
- **Month DD, 2018**; 5:30–7:30 p.m.; Central Center Auditorium, 1028 East 6th Street, Tulsa, OK 74120

2.1 Introduction

This chapter describes the alternatives considered in this Environmental Impact Statement (EIS). The National Environmental Policy Act (NEPA) requires that Federal agencies consider a full range of reasonable alternatives when evaluating the environmental effects of an action. This chapter describes the incidental take permit (ITP) (Section 2.2); alternatives analyzed in detail in this EIS (Section 2.3), as well as alternatives considered but eliminated from further consideration (Section 2.4).

2.2 Incidental Take Permit

The American Electric Power System (AEP or Applicant) has requested the U.S. Fish and Wildlife Service (Service) issue an ITP for ABB with a 30-year duration. American Electric Power would be responsible for ITP compliance and implementation of the proposed Habitat Conservation Plan (HCP) described below.

2.3 Alternatives Analyzed in Detail

This section describes the three alternatives analyzed in detail in this EIS.

- Alternative A – No Action
- Alternative B – Proposed HCP
- Alternative C – HCP with Reduced Permit Term and Plan Area

Evaluation of the three alternatives considered in this EIS fulfills the Service's NEPA responsibility to evaluate a full range of reasonable alternatives to the proposed action that are technically and economically practical or feasible and meet the purpose and need. We developed the alternatives. No Federal, state, or local agency, or the general public, provided any input during the scoping process that suggested new or different alternatives. Alternatives that we considered but eliminated from further consideration are discussed in Section 2.4.

2.3.1 Alternative A: No Action

NEPA requires that an EIS alternatives analysis include consideration of a No Action Alternative, which serves as a baseline with which to compare the impacts of the proposed action and alternatives. Under Alternative A, AEP would not request and we would not issue an ITP for the proposed projects and activities described in Section 2.3.2.2, *Covered Activities* (i.e., operations and maintenance of facilities, construction of lines and facilities, and emergency response and outage repair), and AEP would not submit the programmatic HCP. AEP would continue to construct electric facilities and maintain existing facilities to provide vital services to its customers in the Plan Area.

These activities would continue to be subject to the Endangered Species Act (ESA). AEP would continue to avoid affecting American burying beetle (ABB)-occupied habitat and, where this would not be possible, to minimize the potential impacts. AEP would continue to have the option to pursue project-by-project ITPs under ESA Section 10 or obtain coverage under Section 7 (in cases involving a Federal nexus) for incidental take of ABB in the Plan Area. However, addressing the Covered Activities on a project-by-project basis would be logistically challenging, and would hinder AEP's ability to efficiently address maintenance and emergency issues to its electrical system. The project-by-project approach under Alternative A would be more time consuming and less efficient because of the high volume and frequency of AEP activities and the amount of time it takes to issue an ITP. In the absence of the conservation activities included in the HCP, the project-by-project approach of Alternative A would also result in variable application, or non-application, of the avoidance and minimization conservation measures listed in the HCP, and would result in isolated independent areas of mitigation, which may not be as beneficial for ABB.

2.3.2 Alternative B: Proposed HCP

Under Alternative B, we would approve the HCP and issue a 30-year ITP to AEP for incidental take of the ABB from AEP's maintenance, operation, and expansion activities of electrical facilities in the Plan Area (Covered Activities). AEP would implement the HCP, which is summarized here. The full draft of the HCP can be found on the Oklahoma Ecological Services Office website: <http://www.fws.gov/southwest/es/Oklahoma/>. Alternative B is our Preferred Alternative.

2.3.2.1 Plan Area

The Plan Area for this EIS is the area to which the ITP applies and the approved HCP would be implemented over the 30-year permit term, including where all conservation actions, impacts, and monitoring would take place. The Plan Area consists of 47 counties in Oklahoma, 11 counties in Arkansas, and 4 counties in Texas, a total of 31,931,329 acres (see Figure 1-1).

2.3.2.2 Covered Activities

Alternative B includes issuance of an ITP for AEP Covered Activities with the potential to result in take of ABB. The Covered Activities, as documented in the HCP, include the following and are described in this section.

- 1) Operations and maintenance of facilities, including reconductoring, isolated pole replacement and repair, emergency response and outage repair, routine maintenance and inspections, and vegetation management.
- 2) Construction of lines and facilities, including above-ground electric lines and support facilities (i.e., substations and switching stations), and access road construction and improvement.
- 3) Post-Construction Restoration Activities – HCP implementation activities.

Operations and Maintenance of Facilities

AEP operates and maintains a system of electrical distribution and transmission lines (referred to as existing electrical lines) in Oklahoma, Texas, and Arkansas (Figure 1-1). Distribution lines are defined as electrical lines that operate at less than 69 kilovolts. Transmission lines are designed to

1 move electricity long distances and operate at between 69 and 765 kilovolts. Operations and
2 maintenance activities on these existing electrical lines and associated rights-of-way (ROWs) and
3 facilities include reconductoring, isolated pole replacement and repair, emergency response and
4 outage repair, routine maintenance and inspections, and vegetation management. These activities
5 may occur in ABB habitat. Operations and maintenance activities that have the greatest potential to
6 impact ABB include reconductoring and isolated pole replacement and repair (described in detail
7 below), which may involve the use of heavy machinery and disturb soil and vegetation in ABB
8 habitat. AEP conducts these isolated repair and maintenance activities when needed, typically in
9 response to storm damage or when the equipment exceeds its lifespan.

10 **Reconductoring**

11 Reconductoring is the replacement of old conductors (wires) on existing electric lines with new
12 conductors to ensure system functionality. Conductors are replaced from a boom truck; the ROW is
13 generally accessed via existing roads, although in some cases off-road vehicles or helicopters may be
14 used. Reconductoring typically takes place along 2- to 3-mile sections on transmission lines, but may
15 be done in smaller sections on distribution lines. Reconductoring requires the use of several pieces
16 of equipment, including tensioners (rope trucks) to feed out the new conductor and adjust tension,
17 conductor reels to receive the existing conductor as it is removed, and reels of new conductors.
18 Trailers pulled by semi-trucks, which park on site, typically deliver and remove the conductor reels.
19 Cranes move the conductor reels on and off the trailers. Reconductoring requires temporary work
20 areas for construction equipment laydown and vehicle parking; these areas are approximately 15
21 feet wide and situated beneath the existing electrical line. In limited instances, usually in areas
22 where the existing electrical line changes direction, trucks may need to temporarily park outside of
23 the existing ROW to pull new conductors into place.

24 Pre-reconductoring activities involve installing temporary guard structures at road crossings and
25 other locations (where necessary) to prevent wires from contacting existing electric or
26 communication facilities or passing vehicles. Guard structures consist of wood poles and,
27 occasionally, a support net stretched beneath the conductors. Once conductors are pulled into place
28 and tensioned, they are permanently attached to existing infrastructure. The HCP assumes an
29 average of 26 miles of transmission line reductoring each year, for an approximate total of 780
30 miles over the 30-year permit term. For distribution lines, the HCP assumes 3 miles of distribution
31 line reductoring each year, for a total of 90 miles over the 30-year permit term.

32 **Isolated Pole Replacement and Repair**

33 Pole replacement and repair would occur when an existing pole or pole equipment (i.e., cross arms,
34 insulators, pins, transformers, wires, cables, guys, anchors, switches, fuses, and paint) fails, becomes
35 unsafe, outlasts its usefulness, or is otherwise identified for replacement. Replacement and repair of
36 pole equipment typically are performed with the pole in place using a line truck. Electrical lines are
37 typically de-energized prior to pole replacement.

38 Pole replacement typically involves installing a new pole adjacent to the existing pole and then
39 removing the old pole. Prior to installing a new pole into the ground and removing an existing pole,
40 the new pole is framed (i.e., cross arms, pins, insulators, grounds, bonding, markers, and any other
41 equipment are installed) on the ground adjacent to the existing pole. The pole replacement generally
42 follows the following sequence: a line truck augers a hole, the new pole is moved into the new hole,
43 the conductors are moved from the old pole to the new pole, the old pole is removed, and the old
44 pole site is backfilled with the augured soil. Existing wood poles may be replaced with new wood

poles or, more typically, steel poles with concrete footings. The temporary disturbance area associated with this activity is approximately 1,000 square feet per pole. The HCP assumes 105 transmission line poles and 283 distribution line poles would be repaired or replaced each year over the 30-year permit term. The HCP also assumes an additional 413 distribution line pole replacements each year as a surrogate for disturbance for all other Covered Activities that would occur for distribution lines. American Electric Power's method for estimating take for Covered Activities for distribution lines is different than transmission lines, and for ease of measuring and tracking, impacts from all Covered Activities associated with distribution lines are subsumed under the pole replacement number. See HCP Section 4.3 for details.

Emergency Response and Outage Repair

Emergency response and repair is required for outages, which are typically caused by weather, vegetation interference, equipment failure, accidents, fire, and animals. When outages occur, AEP inspects the line to determine the location and probable cause of the outage. Covered Activities associated with emergency response work typically address storm damage to transmission and distribution lines as well as substations or switching stations. Access is primarily on existing roads, although some overland access with work trucks or all-terrain vehicles (ATVs) is expected. Depending on the cause of the outage, repair may entail anything from reclosing a switch to replacing a transformer or pole. Crews repair and restore circuits as quickly as possible. Occasionally, some ground disturbance, such as soil excavation, soil stockpiling, and the use of construction equipment, may occur. The HCP estimates that each emergency response and outage repair results in approximately 1,000 square feet of ground disturbance and that an average of 53 transmission line and 311 distribution line emergency responses and outage repairs would occur per year over the permit term.

Routine Maintenance and Inspections

American Electric Power must repair or replace pole equipment (i.e., cross arms, insulators, pins, transformers, wires, cables, guys, anchors, switches, fuses, and paint) when it fails, becomes unsafe, outlasts its usefulness, or is otherwise identified for replacement. To determine where repairs and replacements may occur, AEP conducts routine inspections of its transmission and distribution infrastructure several times a year to verify that equipment is functioning safely and efficiently. American Electric Power inspects all transmission and distribution substations to verify equipment operation and conduct safety inspections. Substations are accessed from existing roads in vehicles. American Electric Power also routinely inspects footings and poles to verify stability, structural integrity, and equipment condition (e.g., fuses, breakers, relays, cutouts, switches, transformers, paint). When outages occur because of weather, accidents, equipment failure, or other reasons, AEP inspects lines to determine the location and probable cause of the outage. Transmission and distribution line facilities are typically accessed from the ROW or existing roads, but may require off-road travel, either in vehicles or on foot.

Vegetation Management

Vegetation interference with electric lines is one of the most common causes of electric outages throughout the United States. Electric outages may occur when trees or tree limbs grow, fall, or in other ways make contact with transmission or distribution lines. Outages may also occur when transmission or distribution lines sag or sway into vegetation below or adjacent to the lines because of increased load or ambient air conditions (i.e., high air temperature or wind). Vegetation that comes into contact with electric lines can also start fires. Periodic vegetation management is

necessary on transmission and distribution ROWs and in the vicinity of support facilities, such as substations, to protect the electric transmission and distribution system and minimize outages. Vegetation removal generally occurs periodically throughout the year or when the ROW has become overgrown and operational requirements dictate that access to and through the ROW be maintained for annual patrols and inspections. Routine vegetation management includes periodic patrols of vegetation growing near overhead distribution and transmission facilities. Routine vegetation management includes mowing, pruning, and tree removal to ensure adequate clearance between vegetation and infrastructure. It also includes pruning or removal of trees that may pose a hazard to electric facilities.

Vegetation management requires the use of light and heavy trucks and equipment, mowers, and mechanical tree trimmers in the ROW. Depending on vegetation conditions, ROWs are managed approximately every 1 to 5 years. The focus in vegetation management is to remove woody-stemmed vegetation; frequent mowing of herbaceous vegetation is not necessary. When mowing is necessary, mowing is conducted in a way so that soil disturbance is minimal or non-existent. Mowing typically reduces vegetation to 6 inches. Mowing occurs no more than once a year and often in 3-, 4-, or 5-year cycles, allowing vegetation to grow between management cycles. Mulching is often conducted after mowing (when landowners agree) and all mulch remains on the site to help stabilize the soil.

Construction of Electrical Lines and Facilities

American Electric Power would construct electric transmission and distribution lines and support facilities over the course of the permit term. American Electric Power has described these Covered Activities as: 1) construction and upgrading of above-ground electric lines, 2) road construction and improvement, and 3) new construction or expansion of support facilities.

Construction and Upgrading of Above-Ground Electrical Lines

American Electric Power estimates 1,800 miles (an average of 60 miles per year) of newly constructed transmission lines and line upgrades (also called rebuilds) will be needed in the Plan Area over the permit term. American Electric Power estimates 3.05 miles of newly constructed distribution lines per year in areas with potential to affect ABB habitat, or 91.5 miles over the permit term.

Transmission lines would be built with wood, steel or concrete poles on concrete footings or directly embedded steel poles. Distribution lines would be built with wood or steel poles. Associated activities include surveying and staking the line centerline, clearing of the ROW for new lines, and removing existing electric line facilities for rebuilds; auguring for and pouring structure foundations; assembling and setting support structures; installing hardware on support structures; installing new conductors; and final cleanup.

Constructing new transmission lines would require clearing for a new ROW. New ROWs would be cleared of all woody vegetation to meet AEP's ROW clearing standards. The widths of the ROWs would range from 50 feet to 200 feet depending on the line voltage capacity; they are typically 100 to 150 feet wide. New distribution lines may require limited clearing that is included in the estimate of line clearing required over the permit term. Rebuilds would occur within existing ROWs.

Electrical line power poles are installed using a machine auger or similar equipment to excavate the site of the new pole and any necessary anchor holes. The width and depth of the setting hole depends on the size of the pole, soil type, span, and wind loading. Typically, minimum pole-setting

depths range from 4 to 14 feet. Poles are framed (see *Isolated Pole Replacement and Repair*), and any equipment is installed. Any anchors and guys are installed before the pole is set. A vibratory caisson may be used to set poles. After the pole is set, conductors are strung (see *Reconductoring*). New additions to existing transmission and distribution line facilities or tap lines from the old facilities may require installation of a shoo-fly. Shoo-fly installations involve adding temporary poles or structures around existing permanent facilities within the ROW to limit service interruptions until work crews can make permanent repairs. Shoo-flies consist of a number of poles and anchors supporting conductors to bypass facilities needing upgrades. In some cases, existing conductors can be removed from the old poles or structures and reattached to the shoo-fly structures. This can usually be accomplished with one or two poles for every circuit attached to the structure being shoo-flied. For example, one double-circuit 115-kilovolt tower (six wires attached) would require a minimum installation of four poles. Shoo-fly supports are removed when the repair or construction work is complete.

Road Construction and Improvement

Access to transmission and distribution infrastructure typically occurs within the existing ROW but may require the use of both unimproved and improved roads within and outside of the ROW. American Electric Power anticipates that only rarely would any new road construction or improvement be needed for access. Access to transmission and distribution infrastructure typically occurs within the existing ROW but may require the use of both unimproved and improved roads within and outside of the ROW. American Electric Power estimates that it would construct new access roads or expand/improve existing two-track roads over a total of 2 miles per year, on average, to access ROW for new construction or rebuilds of transmission lines. Access roads would typically be 20 feet wide with a gravel surface.

New Construction or Expansion of Support Facilities

New equipment may need to be installed to address load increases to the electrical system, resulting in the construction of new substations and switching facilities or expansion of existing substations and switching facilities. Construction may involve vegetation clearing, site grading, spreading of base material (6 inches compacted to 4 inches), addition of 1.5 inches of topping rock, drilling of foundations, and installation of electrical equipment. The footprint of expanding an existing or building a new switching station typically requires up to 10 acres of disturbance. Approximately 90 percent of the disturbance consists of permanent vegetation removal within the facility footprint; the other 10 percent consists of temporary vegetation removal and ground disturbance for construction access and staging.

Substations are typically constructed close to residential, commercial, or industrial development, but they may be located in undeveloped areas. New substations or substation expansions vary from 5 to 40 acres in size but are typically 10 acres, which includes about 90 percent of permanent vegetation removal within the footprint of the substation and 10 percent of temporary vegetation removal for construction access and staging. This construction footprint may be required for additional transformers, fencing, and new distribution line outlets. The expansion area also may be used for setbacks, landscaping, and access. Substation sites are graded, paved, or surfaced, and fenced for safety and security reasons. The HCP estimates that 810 substations and switching stations would be constructed over the permit term, an average of about 27 per year.

Post-Construction Restoration Activities

The HCP Conservation Strategy is designed to minimize and mitigate impacts of Covered Activities within the Plan Area and to monitor progress towards achieving the HCP's biological goals and objectives. However, implementation of post-construction restoration of ABB habitat may result in low levels of take of ABB; therefore, these activities are included in the HCP as Covered Activities.

Habitat restoration activities, which could include soil disturbance, seeding, removal of undesirable plants, and limited grading, would generally be temporary and disruptive only in the short term and would be expected to result in a net long-term benefit for ABB. However, these activities might have temporary or short-term adverse effects and might result in limited take of ABB. All restoration activities conducted within the Plan Area that are consistent with HCP requirements would be covered by the HCP.

Table 2-1. Alternative B: Proposed HCP - Summary of Covered Activities in the Plan Area

Covered Activity	Description	Disturbance	Equipment	Disturbance over Permit Term (acres)
Operations and Maintenance of Existing Facilities				
Reconductoring	Replacement of old travelers and conductors to increase current. 26 miles of transmission lines per year/780 over permit term. 3 miles of distribution lines per year/90 miles over permit term.	May require off-road travel by heavy equipment, vegetation clearing, and temporary work areas in a 15-foot width disturbance area under the line.	Helicopter, bucket truck, boom truck, digger derrick truck, trailers, semi-trucks, cranes, ATV/UTV, bulldozers, pickup trucks, wire cards, tensioners, and mowing equipment.	1,418
Isolated Pole Replacement and Repair	Replacement of old poles and line and associated management and maintenance. 105 transmission line poles per year/3,150 over permit term. 696 distribution line poles per year/20,880 over permit term. ^a	An average of 1,000 square feet of temporary disturbance per pole.	Bucket truck, digger derrick truck, trailers, semi-trucks, mowing equipment, bulldozers, cranes, pickup trucks, line trucks, dump trucks, tractors, ATVs, wire cards, and tensioners.	72 (Transmission lines); 479 (Distribution lines)

Covered Activity	Description	Disturbance	Equipment	Disturbance over Permit Term (acres)
Emergency Response and Outage Repair	Emergency repair and restoration of circuits. Number of events varies based on occurrence and severity of inclement weather, but estimated at 53 transmission line events per year/1,590 over permit term. 311 distribution line events per year/9,330 over permit term.	Will require off-road travel with heavy equipment in ROW. Major repairs that require pole/tower replacement and/or reconductoring may result in disturbance similar to that of construction activities. Assumes 1,000 feet of disturbance per event.	Bulldozers, cranes, aerial lift trucks, wire carts, tensioners, pickup trucks, and ATVs. Similar to construction activities; however, more equipment and crews would be on site to address emergencies in order to reduce outage time.	37
Routine Maintenance and Inspections	Routine annual inspection of transmission and distribution lines and associated infrastructure.	May require off-road travel and minimal vegetation clearing.	Helicopter, ATV/UTV, pickup truck.	N/A
Vegetation Management	Routine vegetation management includes mowing, pruning, and tree removal to ensure adequate clearance between vegetation and infrastructure.	Would require heavy equipment travel within the ROW.	Chainsaws, hand tools, pickup trucks, aerial lift trucks, mowing equipment, bulldozers, and helicopters.	N/A
Construction of Electrical Lines and Facilities				
Above-Ground Electric Lines	Construction of new electric lines as an extension from existing lines or rebuilds. 60 miles of transmission lines per year/1,800 over permit term. 3.05 miles of distribution lines per year/91.5 miles over permit term.	Vegetation clearing and/or ground disturbance within the ROW that range from 50 to 200 feet wide, assumed to average 125 feet wide across the Plan Area.	Helicopter, bucket truck, digger derrick truck, ATV/UTV, bulldozers, pickup truck, wire cards, tensioners, trailers, semi-trucks, cranes, and mowing equipment.	27,273

Covered Activity	Description	Disturbance	Equipment	Disturbance over Permit Term (acres)
Road Construction and Improvement	Construction of new access roads or improvement or expansion of existing two-track roads. 2 miles per year/60 miles over permit term.	Vegetation clearing and ground disturbance within the road width, which is typically 20 feet.	Bulldozers, pickup trucks, dump trucks, tractors, and motor graders.	146
Support Facilities	In order to address load increases, additional electrical facilities (either substations or switching stations) may have to be installed, or existing facilities expanded. 27 substations or switching stations per year/810 over permit term.	Substation construction footprints range from 5 to 40 acres, typically approximately 10 acres of disturbance, of which 90 percent is permanent and 10 percent is temporary. Switching station construction footprints typically result in up to 10 acres of disturbance, of which 90 percent is permanent and 10 percent is temporary.	Bulldozers, cranes, lift trucks, pickup trucks, dump trucks, tractors, and motor graders.	8,100

^a The HCP provides a combined disturbance area for all distribution line covered activities under one activity type titled "Pole Installation" (see HCP Table 4-2); ground disturbance for all covered activities for distribution lines is 479 acres. This number is included in the Isolated Pole Replacement and Repair activity in this table. The disturbance acreages for the rest of the covered activities in this table represent transmission lines only.

N/A = cannot estimate disturbance areas for these Covered Activities. The HCP states there is potential for ABB take from these Covered Activities but the frequency with which this could occur is not measureable. Take from these activities are assumed to be accounted for in the conservative impact footprint estimates for other Covered Activities.

ATV = all-terrain vehicle; UTV = utility task vehicle; ROW = right-of-way.

1

2 2.3.2.3 Covered Species

3 Incidental take coverage would only be provided for ABB for the Covered Activities. For purposes of
4 the ITP, take of ABB would be assessed in terms of acres of potentially affected habitat. Habitat is
5 used as a proxy for estimating take of individual ABBs for the following reasons: (1) ABB is small
6 and spends a substantial portion of its life underground, making it difficult to locate injured or dead
7 individuals; (2) ABB losses may be masked by temporary fluctuations in numbers; (3) ABB is
8 primarily active at night; and (4) there is no reliable means to estimate ABB density within the Plan
9 Area.

10 Though other federally listed species are also present in the Plan Area, AEP has not requested take
11 authorization for those species and are not addressed in the HCP. The HCP notes that other federally
12 listed species were considered for coverage but the likelihood that the Covered Activities would
13 adversely affect these species is highly project-specific and would be better managed on an

individual project basis. Where appropriate, other federally listed species would be addressed in separate compliance processes, such as through the ESA Sections 10 and 7 consultation processes. Information on other federally listed species is available in Chapter 3, *Affected Environment and Environmental Consequences*, of this EIS. Effects determinations for the intra-service ESA Section 7 consultation are also found in Chapter 3.

Details on ABB life history, range in the Plan Area, and status is available in Chapter 3, *Affected Environment and Environmental Consequences*.

2.3.2.4 Conservation Strategy

Alternative B would include implementing the conservation strategy for ABB as described in the HCP. The conservation strategy includes a series of avoidance and minimization measures (AMMs) to avoid and minimize impacts from the Covered Activities, mitigation to offset unavoidable impacts on ABB and its habitat, an adaptive management approach, and monitoring and reporting requirements. Each element of the conservation strategy is described in the following sections.

The conservation strategy is based around two biological goals and objectives (Table 2-2). Biological goals are broad, guiding principles based on the conservation needs of the resource. Biological objectives are expressed as conservation targets designed to achieve the biological goals. Objectives are written to be measurable and achievable within a given time frame, and clearly state a desired result. Unless otherwise specified, all biological objectives would be completed by year 30 of the ITP term.

Table 2-2. Biological Goals and Objectives from the HCP

Biological Goal	Goal Description	Goal Objective
Goal #1	Minimize to the maximum extent practicable ^a impacts on the ABB from Covered Activities.	Implement AMMs to reduce the potential for short-term impacts on the ABB from Covered Activities.
Goal #2	Mitigate unavoidable impacts on ABB habitat.	a. Re-establish ABB habitat at sites where Covered Activities result in temporary or permanent cover change habitat impacts. b. Conserve in perpetuity ABB habitat commensurate with the habitat impacts from Covered Activities, by mitigating for temporary, permanent cover change, and permanent habitat impacts in accordance with Service-approved mitigation ratios.

ABB = American Burying Beetle; AMM = Avoidance and Minimization Measure; Service = U.S. Fish and Wildlife Service.

^a Maximum extent practicable - as defined in the Service's 2016 *Habitat Conservation and Planning and Incidental Take Permit Processing Handbook*.

Avoidance and Minimization Measures

The Service must determine that take will be minimized and mitigated to the maximum extent practicable before issuing an ITP. American Electric Power will implement AMMs to reduce the potential adverse effects of Covered Activities on ABB and its habitat. These AMMs support

Biological Goal 1. Avoidance measures are aimed at avoiding adverse impacts. Minimization measures reduce the potentially negative effects on individuals and habitats from a given activity. If AMMs do not completely prevent take, then mitigation measures are employed to mitigate residual adverse effects from a Covered Activity (see Mitigation section below). The specific AMMs are described in the following sections.

The AMMs are required for Covered Activities occurring in occupied ABB habitat where ABBs are assumed to occur or are documented to occur through a valid field survey. The AMMs will not be implemented for Covered Activities occurring outside the Service-defined known range of ABB (as shown in Figure 1-1, but is subject to change as explained in HCP Section 6.3.1.4), in areas unfavorable for the ABB or where a valid survey has negative results (as described in the Service's *American Burying Beetle Oklahoma Presence/Absence Live-trapping Survey Guidance* [U.S. Fish and Wildlife Service 2015]) because take is not anticipated in these areas. American Electric Power will only implement AMMs for emergency response and outage repair activities when they do not affect the timing of the activities conducted because these Covered Activities are unpredictable and often time sensitive. American Electric Power will document these activities via compliance monitoring (see Section 2.3.2.4, *Monitoring and Reporting*). Regardless of whether AMMs are implemented, AEP will mitigate any temporary or permanent habitat impacts resulting from emergency response and outage repair activities on occupied (or assumed occupied) ABB habitat.

Reduce Erosion by Implementing Stormwater Best Management Practices

Construction activities will conform to state-approved, site-specific stormwater management plans using best management practices to control the volume, rate, and water quality of post-construction stormwater runoff. These practices may include erosion control measures such as silt fencing, hay bales, water bars, and other efforts to prevent washing away of topsoil, formation of gullies, or other soil erosion impacts to minimize the impacts on ABB habitat.

Limit Use of Motor Vehicles, Machinery, or Heavy Equipment

American Electric Power will limit off-road use of motor vehicles and heavy equipment in occupied ABB habitat to those necessary to meet the objectives of the project or activity to minimize the potential for soil compaction adversely affecting ABB. If heavy equipment, machinery, or motor vehicle use is required in occupied ABB habitat for a project or activity, these vehicles will be allowed only in the areas that are necessary for the required activity. For Covered Activities resulting in ABB habitat impacts, all motor vehicles, machinery, and heavy equipment will be parked within areas already affected, areas where disturbance is planned to occur, or areas where occupied ABB habitat impacts and mitigation, as appropriate, have been assessed.

Reduce Risk of Motor Vehicles Sparking Wildfire

Vehicle use or improper maintenance of vehicles and machinery could ignite fires during dry conditions or in areas with dry vegetation, which may cause take of ABBs. American Electric Power will avoid parking motor vehicles, machinery, and heavy equipment where dry grass or vegetation could be ignited. All vehicles will be maintained according to their service manuals. In dry conditions, grass and debris will be cleaned away from machinery exhaust systems and bearings on a weekly basis. All bearings will be lubricated and all spark arrestors will be serviced as necessary to reduce risk of sparking a fire. American Electric Power will have a shovel and working fire extinguisher on site at each project in case of accidental ignition of a wildfire.

Increase Safety During Operation Fluid Use and Storage

Accidental release or spill of operational fluids (fuel, oil, or other fluids for maintenance of equipment) may cause take of ABBs. American Electric Power will operate in compliance with all applicable state and Federal laws regarding fuel use and storage. Additionally, all operational fluids will be stored and all equipment fueled within areas already affected, areas where disturbance is planned to occur, or areas where occupied ABB habitat impacts and mitigation, as appropriate, have been assessed.

Limit Disturbance from Mechanical Vegetation Management

Vegetation management in ABB habitat may disturb individuals of the species and alter their normal behavior. American Electric Power will limit vegetation management frequency and duration to that necessary to allow for visual inspection, prevent hazards, and comply with AEP's ROW and overhead electric line vegetation clearing standards. In unaffected areas or areas with temporary or permanent cover change impacts within its ROW where ABB habitat has been restored, AEP will not mow herbaceous vegetation more than once per year to maintain soil moisture for ABB habitat.¹ Woody-stemmed vegetation (trees, shrubs, and existing stumps) may be cut as close to the ground as possible in compliance with the AEP Forestry Manual. The mowing and vegetation trimming equipment that AEP uses to maintain ROW vegetation typically leaves mulch in affected areas to minimize erosion and help maintain soil moisture in these areas.

Limit Use of Artificial Lighting

American Electric Power does not anticipate having to conduct Covered Activities outside of daylight hours except in the event of emergency repair activities (see Section 2.3.2.2, *Emergency Response and Outage Repair*). If Covered Activities need to take place at night, artificial lighting may be required, which could affect ABBs by disrupting normal behavior patterns. If artificial lighting is needed, the following guidelines will be followed from April 15th through October 15th to encompass the ABB active season², if necessary.

- Within occupied ABB habitat, AEP will down-shield necessary lighting associated with all operations or construction activities that extend beyond daylight hours to minimize the potential impact on ABBs. Emergency response and outage repair situations are not required to down-shield lighting.
- Artificial lighting will not be limited outside of ABB habitat.

Training

American Electric Power will implement a training program for all personnel conducting or supervising covered activities that may disturb ABB occupied habitat (i.e., that will result in ground disturbance). Annually as part of AEP's internal training, or prior to initiating activities within occupied ABB habitat, personnel will be given a presentation focused on identifying the ABB and summarizing the requirements of AEP's HCP. During Covered Activities other than Emergency Response and Outage Repair, personnel will be instructed to report any ABBs or their larvae

¹ In rare instances, AEP may mow more frequently than annually per an existing landowner agreement.

² This date range is intended to conservatively encompass the ABB active season and will be easier for AEP to implement consistently than a date range that varies from year to year.

observed to the project manager or environmental inspector, remove all food wastes from the ROW each day, and prohibit dogs or cats on the ROW (workers may not bring animals on to the ROW). Project managers or environmental inspectors will report the sightings to the appropriate USFWS Ecological Services Field Office. American Electric Power will post signs at all access points to the project area identifying areas of ABB occupied habitat and reminding workers to follow special restrictions in the area.

Mitigation

The conservation strategy includes mitigation to compensate for the incidental take of ABB and the loss or degradation of ABB habitat from implementation of Covered Activities. The Applicant's compensatory mitigation supports Biological Goal 2. This mitigation will include restoring ABB habitat in areas with temporary and permanent cover change habitat impacts and conserving in perpetuity lands that support ABB habitat.

Post-Construction Restoration for Temporary and Permanent Cover Change Impacts

The following mitigation measures will be implemented to restore ABB habitat in areas where Covered Activities would temporarily or permanently change ABB habitat. Areas with permanent impacts, either actual or assumed, are not subject to these measures.

Relief of Soil Compaction

Following construction within ABB-occupied habitat, AEP will disk (mechanically break up) compacted soil in laydown areas and material storage areas where soil is compacted to relieve soil compaction, facilitate revegetation, and help restore soil conditions for use by the ABB. This measure is not required for small project areas, such as maintenance work on a power pole, where the use of tractors and ripping equipment would result in increasing the impact area.

Revegetation for Temporary and Permanent Cover Change Impacts

Following covered activities resulting in ground disturbance and where AEP would mitigate for temporary or permanent cover change habitat impacts (i.e., no permanent habitat impacts), vegetation will be re-established with a native species composition similar to that of the surrounding area (typically warm season grasses) or of the same vegetation type that existed prior to impacts. If ground disturbance ends during the winter when plants are dormant, bare soil will be temporarily stabilized, if necessary, to prevent erosion by broadcasting cool season plant seeds (e.g., annual rye grass or wheat seed) and, where necessary, using clean, weed-free wheat straw as mulch to protect seed and increase soil moisture. These areas will be re-established with vegetation at the beginning of the next growing season (preferably prior to the start of the ABB active season in mid to late May). Seeds used during vegetation re-establishment will be free of invasive species seeds.

For temporary vegetation impacts, ABB habitat will be re-established with low-growing vegetation that existed prior to disturbance (mixed grass pasture, native grass and scrub/shrub, and native grass pasture). Vegetation will be re-established to the original density (based on visual comparison of before/after photographs and comparison to adjacent undisturbed areas) within 5 years of initial disturbance consistent with pre-disturbance conditions. For permanent vegetation cover change impacts where pre-disturbance vegetation type cannot be restored within 5 years (e.g., forests), vegetation will be restored to a condition suitable for ABB use within 5 years of initial disturbance. American Electric Power will also conserve ABB habitat off site to mitigate for temporary and

permanent cover change impacts, as described in the following section - *Offsite Habitat Mitigation for Temporary, Permanent Cover Change, and Permanent Impacts*. If revegetation and restoration of ABB suitable habitat is not achievable due to site conditions within 5 years, AEP will mitigate for permanent habitat impacts for the portion of the impacted area that remains unrestored (see *Offsite Habitat Mitigation for Temporary, Permanent Cover Change, and Permanent Impacts*). Should AEP be required to conduct Covered Activities, such as emergency response or outage repairs, on sites being restored prior to complete restoration but following the initial impact (not to exceed 5 years), no additional mitigation (i.e., habitat mitigation through provision of mitigation lands or conservation bank credits) is required so long as these areas meet the restoration success criteria within 5 years of the initial impact. Once ABB habitat is restored, future impacts in the same area will be considered a new impact and may require additional mitigation consistent with the terms of the HCP.

Offsite Habitat Mitigation for Temporary, Permanent Cover Change, and Permanent Impacts

Impacts on ABB habitat will be offset by conserving in perpetuity ABB habitat in the Plan Area according to Service-approved mitigation ratios, dependent on the type and location of the impact. The Service's *American Burying Beetle Impact Assessment for Project Reviews* (U.S. Fish and Wildlife Service 2014b) and *American Burying Beetle Mitigation Lands Guidelines* (U.S. Fish and Wildlife Service 2017) provide guidelines for mitigating impacts on ABB habitat. The mitigation ratios provided in the guidance (Table 2-3) will be used to mitigate the Covered Activities' temporary, permanent cover change, and permanent impacts on ABB habitat in known range in the Plan Area. If these impacts occur within ABB Conservation Priority Areas (CPA) or ABB mitigation land, mitigation will occur at ratios per the guidelines (Table 2-3). The CPAs shown in Figure 1-1 is based on the Service 2016 designation of CPAs in Oklahoma and 2017 designation of CPAs in Arkansas. The 2016 and 2017 designations will be used for the purposes of mitigation unless the Service revises the CPA boundaries. If the Service changes the CPA boundaries in Oklahoma or Arkansas (expands or shrinks), or adds CPAs in Texas, AEP will mitigate the impacts of the Covered Activities according to the latest maps as soon as they are made available to the public. If AEP is unable to or chooses not to restore ABB habitat in areas with temporary or permanent cover change impacts within 5 years of initial disturbance, these areas will be mitigated as permanent habitat impacts through offsite habitat conservation. Note that only the portion of the areas that are unsuccessfully restored will require additional mitigation. Based on the estimated amount of temporary, permanent cover change, and permanent impacts that could occur in the Plan Area (65.5, 8.7, and 25.8 percent, respectively) and an estimate of the proportion of these impacts that could occur within CPAs or mitigation lands, the HCP estimates that 3,725 acres of ABB habitat will need to be conserved over the permit term and managed for the ABB in perpetuity to mitigate impacts from Covered Activities. American Electric Power would establish mitigation in two ways: 1) ahead of time and in at least the amount to cover impacts for Covered Activities associated with distribution lines and emergency response and outage repairs for at least the following year, and 2) on a project-specific basis for capital projects (e.g., new transmission lines) as described in the following sections - *Service-Approved Conservation Banks*, *First-Party Mitigation Lands*, and *Third-Party Mitigation lands*.

American Electric Power may choose to prepay for mitigation several years in advance to minimize the need to pay annually and to lock in more favorable mitigation costs (e.g., lower per acre cost when buying in larger amounts). This mitigation will be tracked cumulatively throughout the permit term. Mitigation paid in advance will not be refunded if overestimated.

1 **Table 2-3. Mitigation Ratios for American Burying Beetle Habitat Impacts**

Habitat Impact Duration and Type	Required Mitigation Ratios (Impact: Mitigation)		
	American Burying Beetle Range outside of Conservation Priority		Mitigation Land
	Area ¹	Area ²	
Temporary	1:0.25	1:0.5	1:1.5
Permanent Cover Change	1:0.5	1:1	1:2
Permanent	1:1	1:2	1:3

Note: Ratio = acres of impact to acres of offset

¹ In Arkansas this area is defined as ABB Tier 2 and ABB area (non-CPA).

² In Arkansas this area is defined as ABB Tier 1 (CPA), which is analogous to Oklahoma CPAs (Oklahoma does not use a CPA tier system).

Source: U.S. Fish and Wildlife Service 2016, 2017

2 ***Approved Conservation Banks***

American Electric Power System can mitigate ABB habitat impacts by purchasing credits from a Service-approved conservation bank. American Electric Power System will purchase mitigation credits prior to impacts occurring. If it is infeasible to purchase mitigation credits prior to impacts, AEP will sign a purchase agreement with a mitigation banker prior to impacts occurring, and AEP will purchase the mitigation credits within 6 months after impacts occur. Conservation banks are permanently protected lands that contain natural resource values for species listed under the ESA or other species at risk. By definition, a Service-approved conservation bank meets the minimum standards and other requirements described in Service guidelines, *American Burying Beetle Conservation Strategy for the Establishment, Management, and Operations of Mitigation Lands* (U.S. Fish and Wildlife Service 2014a) and *Guidance for the Establishment, Use, and Operation of Conservation Banks* (68 FR 24753, May 8, 2003).

Conservation banks are established through an agreement between the Service and the bank sponsor. The conservation easement for the bank must be approved by the Service. If the purchase of credits in a Service-approved conservation bank (either currently approved or approved in the future) is chosen as a form of mitigation for Covered Activity impacts, the bank sponsor is responsible for managing the mitigation land in perpetuity upon sale of the credits and ensuring success. American Electric Power will purchase appropriate credits to ensure that it holds the adequate number of credits to account for any ABB-occupied habitat impacts that could result in take of ABB. Currently approved ABB conservation banks in the Plan Area are listed in Table 2-4.

Table 2-4. Service-Approved American Burying Beetle Conservation Banks in the Plan Area

Name	Location	Total Available American Burying Beetle Credits¹
Muddy Boggy Conservation Bank	South Central Oklahoma	1,168
American Burying Beetle Conservation Bank	Pittsburgh County, Oklahoma	240
Total Available Credits		1,408

¹ As of August 31, 2016.

First-Party Mitigation Lands

If sufficient ABB credits are not available at a Service-approved conservation bank to meet the needs of the HCP Conservation Strategy or if a Service-approved conservation bank does not exist in the state where impacts would occur and mitigation is required to occur in that state, AEP may opt to develop its own first-party mitigation site. First-party mitigation lands are owned and managed by the permittee. To propose first-party mitigation land, AEP would obtain Service approval on a management and monitoring plan, including funding assurances, prior to impacts occurring. Similar to Service-approved conservation banks, AEP would seek to establish first-party mitigation prior to impacts occurring. If it is infeasible to establish mitigation lands prior to impacts occurring, a purchase agreement will be in place at the time of impacts occurring, and AEP will purchase or dedicate its own mitigation lands within 6 months after impacts occur. The permittee or its designee is responsible for managing the mitigation lands in perpetuity, even if the project is finite in duration, and ensuring success.

Third-Party Mitigation Lands

If sufficient ABB credits are not available at a Service-approved conservation bank to meet the needs of the HCP Conservation Strategy or if a Service-approved conservation bank does not exist in the state where impacts would occur and mitigation is required to occur in that state, AEP may work with a third party to establish a mitigation site for a single project with large impacts on ABB habitat. Third-party mitigation lands are typically established for a single project or permittee, unlike Service-approved conservation banks, which are established for multiple projects. Similar to first-party mitigation lands, third-party mitigation lands and agreements must meet the minimum standards described by the Service (U.S. Fish and Wildlife Service 2014a). Third-party mitigation (e.g., conservation easements and agreements) must be approved by the Service prior to any habitat impacts that could result in take of ABB. The landowner, or easement holder, must manage the lands in perpetuity and is responsible for ensuring the success of habitat conservation on the property. AEP may also choose to pay into a Service-approved ABB in-lieu fee program to mitigate for impacts, should one exist in the Plan Area in the future during the permit term.

Adaptive Management

While the goal of the HCP is to achieve the biological goals and objectives for the ABB, it is unknown whether the conservation strategy will achieve the intended results. As a result, the HCP includes an adaptive management program to identify any changes or responses needed in order to respond to unexpected results or results that do not meet biological goals and objectives. HCPs are required to contain adaptive management when there are substantial gaps in information concerning covered species that may pose significant risk after the issuance of an ITP. These uncertainties may include

lack of ecological data (e.g., food sources, foraging habitats, and territory size), uncertainty about habitat or species management, uncertainty regarding the effectiveness of certain conservation strategies or measures, or uncertainty about the extent of potential effects posed by the activities covered by the ITP.

American Electric Power will incorporate adaptive management into the management of any first-party mitigation sites it uses. The adaptive management strategy would be included in a management and monitoring plan that would be approved by the Service to establish any first party-mitigation lands. To produce an efficient and effective management process, AEP will review the annual report and coordinate with the Service, and recommend specific changes in management directions. Issues AEP may address include thoroughness of the annual report and implications of the monitoring efforts relating to the need for management changes. If AEP determines that the biological goals or objectives are not being met, or management and/or monitoring activity is ineffective in conserving ABB, then adjustments to the management program may be warranted. The annual report AEP submits to the Service will directly address the adaptive management issue, and it will state that management should or should not change. Based on monitoring findings, AEP and the Service will coordinate to determine whether specific management or monitoring actions need to be changed.

For conservation banks or third-party mitigation lands, management plans are developed to incorporate adaptive management principles that provide flexibility to accommodate needed changes to achieve established biological goals and objectives as described in the *American Burying Beetle Conservation Strategy for the Establishment, Management, and Operations of Mitigation Lands* (U.S. Fish and Wildlife Service 2014a). Because the HCP is using established ratios and, where feasible, Service-approved conservation banks, the role of adaptive management in mitigation is small. Adaptive management to meet biological goals and objectives on third-party mitigation lands and Service-approved conservation banks is the responsibility of the landowner or banker.

Monitoring and Reporting

Monitoring and reporting will be used to ensure that minimization and mitigation measures are being implemented. Monitoring also ensures that the mitigation measures benefit the species and collectively meet the biological goals and objectives of the HCP. Monitoring can help to identify problems at an early stage so that corrective actions can be implemented. Monitoring in the HCP consists of three basic categories: (1) compliance monitoring, (2) monitoring of post-disturbance restoration areas, and (3) monitoring of offsite mitigation areas. American Electric Power will also prepare an annual report to document permit compliance and implementation of the HCP. Monitoring is described in more detail in HCP Section 5.6 and the detailed requirements of the annual report are provided in HCP Section 6.2.1.1.

2.3.3 Alternative C: HCP with Reduced Permit Term and Plan Area

Under Alternative C, we would issue an ITP to AEP for take of ABB as a result of the same Covered Activities, Covered Species, and Conservation Strategy described under Alternative B, but over a shorter permit term of 20 years (instead of 30 years) and across a smaller Plan Area that matches the current known ABB range as recognized by the Service in Oklahoma and Arkansas (see Figure 1-1; the Service does not currently recognize any ABB range in Texas). This alternative eliminates the potential ABB range expansion areas in Oklahoma, Arkansas, and Texas (i.e., the blue and green

areas in the Plan Area shown in Figure 1-1). Instead, the HCP under Alternative C would focus on areas where the potential effects to ABB occupied habitat would most likely occur and where there would be the greatest likelihood of take of ABB. The Plan Area under Alternative C is 19,975,548 acres, a reduction of 37 percent over the Plan Area in Alternative B.

While the smaller Plan Area under Alternative C would presumably limit some of AEP's activities and require AEP to obtain additional coverage under separate ESA authorizations (i.e., Section 7 or Section 10), the known ABB range covers a large majority of the HCP Plan Area, including all of the ABB CPAs, most of the Oklahoma portion of the Plan Area, and a significant portion of the Arkansas portion of the Plan Area. Alternative C would remove the four Texas counties covered under Alternative B. Resource impact types and mechanisms under Alternative C would be the same as those described for Alternative B, but the amount of overall activities conducted and associated impacts would be less than Alternative B because they would occur over a shorter period of time. The pace of Covered Activities in Alternative B is expected to be evenly distributed throughout that 30-year permit term. Therefore, the Service assumes that the Covered Activities in Alternative C would be 67 percent ($=20 \text{ years}/30 \text{ years}$) of the amount of the Covered Activities in Alternative B. The reduction in size of the Plan Area by 37 percent is expected to further reduce the amount of Covered Activities. Applying these assumptions, the amount of land disturbance that would occur and ABB occupied habitat expected to be impacted by Covered Activities in Alternative C would be 2,840 acres, which is a reduction of 3,898 acres (or 58 percent less) compared to Alternative B.

The conservation strategy, monitoring and reporting, adaptive management, and the amendment process under Alternative C would be the same as described under Alternative B but would be conducted over 20 years rather than 30 years, and for fewer projects and operations and maintenance activities. Less mitigation would be provided under Alternative C than Alternative B because of fewer impacts of Covered Activities to ABB occupied habitat. Table 2-5, Comparison of Alternative Features, provides a summary of Alternatives A, B, and C.

Table 2-5. Comparison of Alternative Features

Topic	Alternative A – No Action	Alternative B – Proposed HCP	Alternative C – HCP with Reduced Permit Term and Plan Area
Permit Duration	No Programmatic ITP issued. Compliance with ESA would occur under either Section 10 (project-specific HCP) or 7 (Federal consultation) on a project-by-project basis.	Proposed 30-year ITP	20-Year ITP
Plan Area	Determined on a project-by-project basis for future projects.	31,931,329 acres	Smaller than Proposed HCP; covers the current known ABB range
Covered Species	Species addressed would be determined on a project-by-project basis for future projects.	ABB	Same as Proposed HCP

Topic	Alternative A – No Action	Alternative B – Proposed HCP	Alternative C – HCP with Reduced Permit Term and Plan Area
Covered Activities	Determined on a project by project basis for future projects.	Operations and maintenance of existing facilities; construction of lines and facilities; and emergency response and outage repair.	Same type of Covered Activities as Proposed HCP but over less area and less time.
Streamline Future ESA Compliance	No	Yes	Same as Proposed HCP but to a lesser degree because of shorter permit term.
Potential for Incidental Take	Yes. Increased potential for take. Potential for project-by-project take authorized under individual Section 10 or 7 ESA Consultations, but we are unable to speculate on the likelihood the Applicants would pursue this option.	Yes, but offset by minimization measures and mitigation, adaptive management, and monitoring and reporting.	Same type of impacts but 58% less than Proposed HCP, and for a shorter permit term (10 years less).
Conservation Strategy	Determined on a project-by-project basis.	Commitments to avoid, minimize, and mitigate for projected impacts, including take of ABB.	Same type as Proposed HCP but over a shorter permit term. Less mitigation because of less impact.
Monitoring and Reporting	Determined on a project-by-project basis.	Standardized compliance monitoring; assessing the effectiveness versus success criteria; annual reporting.	Same as Proposed HCP
Adaptive Management	Determined on a project-by-project basis.	Adaptive management program is based on results of monitoring and reporting; components of the conservation strategy, may then be modified based on results of adaptive management.	Same as Proposed HCP
No Surprises Rule	N/A	Regulatory assurances for all Covered Species.	Same as Proposed HCP
Amendment Process	N/A	HCP and ITP can be changed for interpretations, corrections, clarifications, or missing details, or through the amendment process.	Same as Proposed HCP
Permittee	American Electric Power	American Electric Power	Same as Proposed HCP

HCP = Habitat Conservation Plan; ITP = incidental take permit; ESA = Endangered Species Act; ABB = American Burying Beetle.

2.4 Alternatives Considered but Eliminated from Further Consideration

2.4.1 Shorter Permit Term in Context of Multi-district Litigation

The Service considered but eliminated from detailed analysis an alternative to approve the Proposed HCP and issue an ITP covering a 15 year permit term to address potential new ESA species listings that may occur in the Plan Area under the multi-district litigation (MDL). The MDL is a nationwide settlement between the Service and WildEarth Guardians and the Center for Biological Diversity that was approved by the U.S. District Court for the District of Columbia in 2011 that requires the Service to decide whether to extend federal protection under ESA to 757 plant and animal species. The MDL settlement established a multi-year work plan and schedule for final listing decisions on 251 species on the candidate list, and developing initial findings on the other 506 species. Whereas a shorter permit term would allow a reevaluation of new species that may be listed under MDL in the Plan Area, the MDL ends at the end of 2018 and would have very little overlap with implementing the HCP and ITP. Therefore, the Service determined this alternative would not be reasonable and was eliminated from further consideration.

2.4.2 Additional Protected Species – Bald Eagle and Interior Least Tern

The Service considered but eliminated from detailed analysis an alternative to analyze the HCP with take coverage for two additional federally protected species – bald eagle and interior least tern. The Texas Parks and Wildlife Department expressed concern in their scoping comments about these species, particularly along the Red River.

The bald eagle is not listed under the ESA and including it as a Covered Species in the HCP would not meet our purpose and need in this EIS. Bald eagle is protected by the Bald and Golden Eagle Protection Act (BGEPA). Regardless of whether the bald eagle is a Covered Species in the HCP, AEP must comply with BGEPA and either avoid take of bald eagle (as defined by BGEPA) or obtain a BGEPA permit if a Covered Activity would result in take of bald eagles. In this EIS we evaluate the effects of implementing the proposed HCP and alternatives on bald eagle, including along the Red River.

The interior least tern is listed as endangered under the ESA. Because the species' habitat is much more narrowly defined (e.g., large rivers such as the Red River and Arkansas River) compared to ABB, the likelihood the Covered Activities would occur in an area where interior least tern may be present (or within unoccupied interior least tern habitat) would be highly unlikely. Therefore, any potential adverse effects (were it to even occur *and* also reach the level of take) to the species would be highly project specific and limited to a few locations in the large Plan Area. Therefore, we determined that ESA Section 10 authorization for any AEP project or activity that could result in take of an interior least tern is better achieved on an individual project basis due to the very low probability of take ever occurring and only at highly localized sites. In this EIS we evaluate the effects of implementing the proposed HCP and alternatives on interior least tern.

Chapter 3

Affected Environment and Environmental Consequences

3.1 Introduction

Chapter 3 of the Environmental Impact Statement (EIS) describes the existing environmental conditions in the Plan Area and the potential direct and indirect impacts on the natural and human environment from the proposed Habitat Conservation Plan (HCP) and alternatives. To streamline and improve the readability of this EIS, we have combined the discussion of affected environment and environmental consequences into a single chapter, Chapter 3, *Affected Environment and Environmental Consequences*.

Following the introduction, this chapter addresses the following resources: biological resources (Section 3.2); climate and air quality (Section 3.3); water resources (Section 3.4); soils (Section 3.5); cultural resources (Section 3.6); visual resources (Section 3.7); land use (Section 3.8); traffic and transportation (Section 3.9); socioeconomics and environmental justice (Section 3.10); and public health and safety, including noise (Section 3.11). Each resource section consists of a description of the approach to characterizing and evaluating the resource and the assessment methodologies used (approach and methodology); the potentially affected resource (affected environment); and the potential impacts on that resource (environmental consequences). Appendix C provides a description of the regulatory context for each resource. Unless otherwise noted in the Approach and Methodology sections for the resource areas, the study areas for the analyses in the EIS correspond to the Plan Area for the HCP.

This introduction provides a description of the methodology for assessing direct and indirect effects (3.1.1), including assumptions to the analysis. The assessment of impacts from Alternatives A and C is also included (3.1.2) in this section; this approach eliminates redundancy in Chapter 3 resource sections, because impacts are essentially the same across Alternatives A, B, and C as described further herein.

3.1.1 Methods for Assessing Direct and Indirect Effects

The EIS focuses on what is most important to the analysis. For example, the analysis is more detailed for biological resources than for other aspects of the human environment (e.g., air quality, transportation, noise, etc.), given the direct relationship between issuance of an incidental take permit (ITP) and effects on wildlife species and their habitat. The environmental consequences analysis focuses principally on the direct and indirect impacts of the proposed Covered Activities anticipated to result in incidental take of the American burying beetle (ABB), as well as any impacts associated with implementing the conservation strategy (i.e., avoidance and minimization measures [AMMs], mitigation measures, and monitoring actions) of the HCP.

The action analyzed under Alternative B - Proposed HCP, is that we would approve the HCP and issue a 30-year ITP to AEP for incidental take of the ABB from AEP's maintenance, operation, and expansion activities of electrical facilities in the Plan Area. The resource effects analyses in this chapter are discussed at a programmatic level to reflect the geographic scope of the Plan Area and

the lack of specificity of where and when Covered Activities would occur over the 30 year permit term. As such, an overall impact conclusion statement on the specific degree or magnitude of the various potential impacts is not possible, informative, or meaningful. If or how much a potential impact on a particular resource would occur from Covered Activities would depend on various factors, including the type, location, or timing of the Covered Activity, type of potential impact, amount of impact, duration of impact, sensitivity of the resource in the area (e.g., an impaired surface water), and applicable regulatory requirements. As such, resource impacts from Covered Activities range from no impact to minor impacts (i.e., minimal, negligible, or inconsequential) to moderate impacts (i.e., more than minor, noticeable), to substantial impacts (more than moderate and may rise to the level of significance). These terms are not used in the resource impact analysis, and instead the impacts are discussed in a programmatic context associated with the large geographic area and the 30-year permit term.

3.1.1.1 Analysis Assumptions

The following assumptions are part of the EIS analysis:

1. AEP would continue to construct electric facilities and maintain existing facilities in the Plan Area to provide vital services to its customers under Alternatives A, B, and C. Therefore, the impact types and mechanisms for all resources are the same for all alternatives.
2. The amount of projects and activities AEP could accomplish under Alternative A (No Action) would likely be less than under the Alternative B (Proposed HCP) and Alternative C (Reduced Permit Term) because of the inefficiency and time required to obtain separate ESA authorizations for individual projects under the No Action Alternative. Therefore, the magnitude of the overall impacts to the environment from covered activities would be less under the No Action Alternative when compared to Alternatives A or B.
3. AEP would continue to implement their Avian Protection Plan (APP) under all alternatives to avoid or minimize impacts on protected bird species.

3.1.2 Impact Assessment for Alternatives A and C

Covered Activities and associated resource impact types and mechanisms would occur under all alternatives, because AEP would continue to conduct their operations and maintenance activities and would undertake new construction in the Plan Area to continue to serve their customers. Impacts under Alternatives A and C would generally be less than under Alternative B because of the smaller plan area and permit term (Alternative C) and the inefficiencies of project-by-project ESA authorizations (Alternative A). Because the impacts under Alternative B are addressed at a programmatic level (except the ABB take quantification), the impact assessment for all resources under Alternatives A and C becomes a relative statement of impact compared to Alternative B that is identical across all resources. As such, the impact assessments of Alternatives A and C for all resources addressed in Chapter 3 are provided here to avoid redundancy in each resource section. The only exception is the Alternative C impact assessment for ABB, which is addressed in Section 3.2.3, *Environmental Consequences*.

3.1.2.1 Impacts from Alternative A: No Action Alternative

Under Alternative A, the No Action Alternative, we would not issue a programmatic ITP for AEP's operations and maintenance activities and new construction throughout the Plan Area. AEP would

continue to conduct operations and maintenance activities and new construction in the Plan Area, which would continue to require either avoiding take of ABB or pursuing project-specific ESA compliance through either a Section 7 consultation (if a Federal nexus exists) or through individual project-specific Section 10(a)(1)(B) permits and HCPs, as necessary. Under Alternative A, the impact mechanisms and types of impacts on all resource areas would be the same as those described for Alternative B, the proposed HCP. However, the timing and extent of impacts (i.e., when the impacts would occur and to what extent) would be different than Alternative B because they would occur on a project-by-project basis. The amount of projects and activities that AEP could accomplish under Alternative A may be less than under Alternative B because of the inefficiency and time required to obtain separate ESA authorizations for individual projects. As such, over the course of 30 years, there may be slightly less impacts on all the resource areas under Alternative A compared to Alternative B.

3.1.2.2 Impacts from Alternative C: HCP with Reduced Permit Term and Plan Area

Under Alternative C, HCP with Reduced Permit Term and Plan Area, we would issue an ITP for AEP's operations and maintenance activities and new construction over shorter period (20 years) and across a smaller Plan Area compared to Alternative B, the proposed HCP. Under Alternative C, the impact mechanisms and types of impacts on the resource areas would be the same as those described for Alternative B. However, the amount of the overall Covered Activities conducted and the associated impacts would be less than Alternative B by approximately 58 percent, because the activities and impacts would occur over a smaller area and for a shorter period of time. The estimated annual impact to occupied ABB habitat in Alternative C's Plan Area would be approximately 63 percent ($= 19,975,548 \text{ acres} / 31,931,329 \text{ acres}$) of the impact under Alternative B because of the smaller Plan Area. Assuming the same estimated annual impact to occupied ABB habitat of 224.8 acres under Alternative B, this would amount to approximately 142 acres of occupied ABB impact per year across Alternative C's Plan Area. Further, the permit term of 20 years would be approximately 67 percent ($= 20/30$) of the impact authorized under Alternative B. Over the 20-year permit term, this impact would total approximately 2,840 acres, which is 3,898 (or 58 percent) fewer acres of impact than in Alternative B.

3.2 Biological Resources

This section describes biological resources in the Plan Area, including vegetation communities, general fish and wildlife, Covered Species, and special-status species.

3.2.1 Approach and Methodology

3.2.1.1 Vegetation

Vegetation communities in the study area are described using two geographic information system (GIS) data sources: the U.S. Environmental Protection Agency's (EPA) ecoregion mapping of the United States (U.S. Environmental Protection Agency 2016) and the National Land Cover Database of the conterminous United States (Homer et al. 2015). These GIS data were overlain with the study area to quantify and describe vegetation communities and plant species by state. We used literature

associated with these GIS data to describe vegetation communities and common plant species in the study area.

3.2.1.2 General Fish and Wildlife

We used the following sources to describe general fish and wildlife species in the study area.

- State Wildlife Action Plans (Fowler 2015; Oklahoma Department of Wildlife Conservation 2015; Texas Parks and Wildlife Department 2005a).
- EPA Level III Ecoregion GIS data (U.S. Environmental Protection Agency 2016).

The EPA ecoregion GIS analyses completed to characterize the vegetation communities in the study area were used to inform habitat and general species associations in the study area. Information regarding Species of Greatest Conservation Need was obtained from the State Wildlife Action Plans.

3.2.1.3 Covered Species

We are considering incidental take authorization for the ABB. The ABB is described using information from Service sources (e.g., Recovery Plan; ABB 5-year review) and other literature.

3.2.1.4 Special-Status Species

We used the following sources to describe special-status species in the study area.

- Federally designated critical habitat GIS data (U.S. Fish and Wildlife Service 2017a).
- Lists of federally threatened and endangered species, species proposed for listing, and candidate species, as well as migratory birds, by county (U.S. Fish and Wildlife Service 2017b).
- Lists of state threatened and endangered species (Arkansas State Game and Fish Commission Code Book, Addendum Chapter P1.00; Oklahoma Department of Wildlife Conservation 2017; Texas Parks and Wildlife Department 2017).

The critical habitat GIS data layer was overlain with the study area to quantify and describe critical habitat in the study area by state. The Service's critical habitat GIS data layer maps the specific geographic areas (as defined and described under ESA regulations) with the physical or biological features essential to a federally threatened or endangered species for which it is designated.

The Service's Information for Planning and Consultation (IPaC) (U.S. Fish and Wildlife Service 2017b) system was accessed to obtain a list of federally threatened and endangered species, species proposed for listing, candidate species, and migratory birds of conservation concern. State-listed species were obtained from state databases and state game and fish code (Arkansas State Game and Fish Commission Code Book, Addendum Chapter P1.00; Oklahoma Department of Wildlife Conservation 2017; Texas Parks and Wildlife Department 2017).

3.2.2 Affected Environment

3.2.2.1 Vegetation

This section addresses vegetation communities that are considered common and are not identified by Federal or state agencies as at-risk species that require special management. Plant species that are at risk and that are managed under special purpose statutes (e.g., the ESA) are defined as special-status species and are discussed in Section 3.2.2.4, *Special-Status Species*. Refer to Section 3.4.1.3, *Wetlands*, for a discussion of wetland vegetation communities, which are managed and regulated differently than other vegetation communities. Vegetation communities in the study area are described in this section by ecoregion and land cover type.

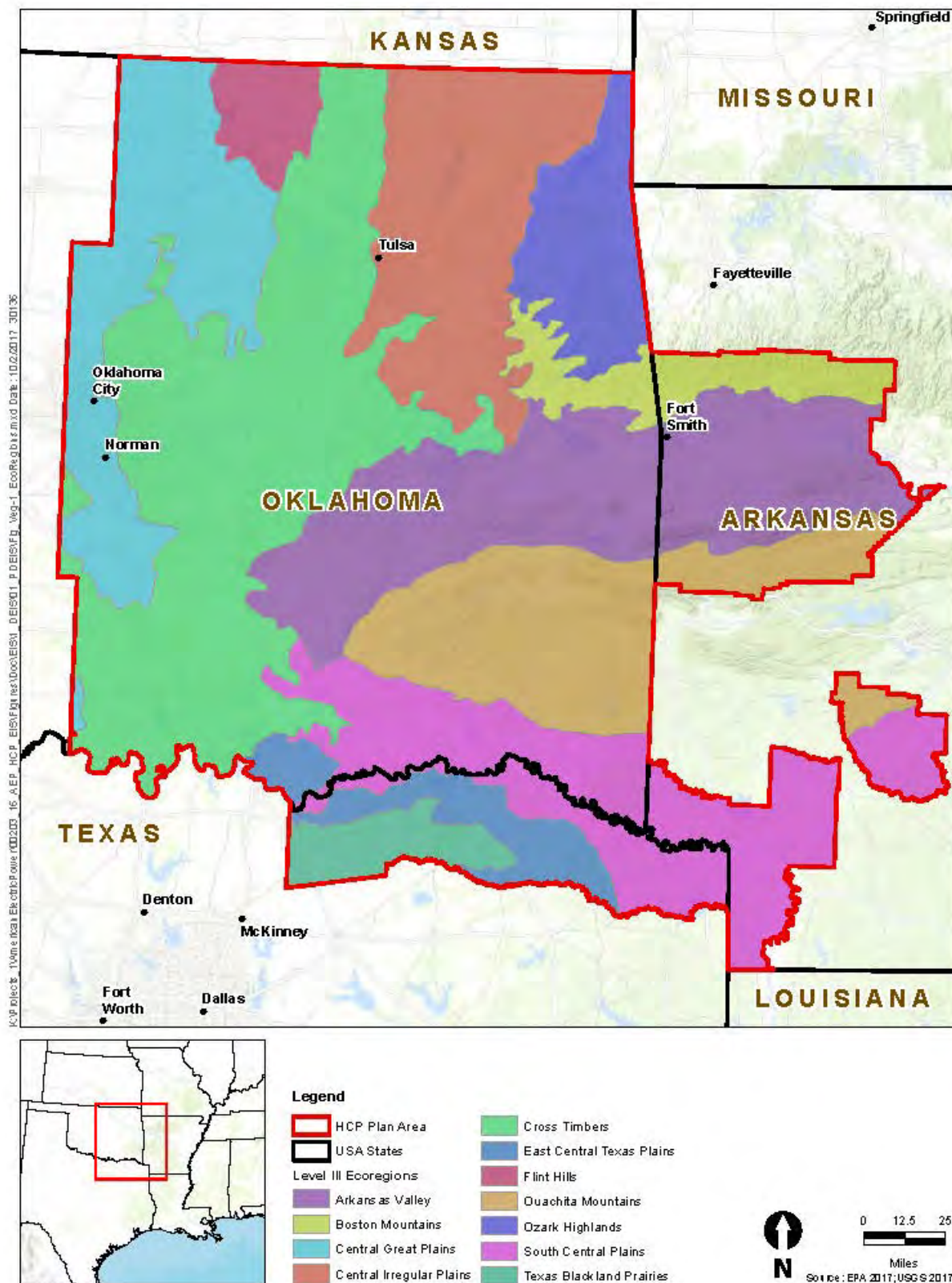
Vegetation Communities by Ecoregion

The EPA has described vegetation and land characteristics on large geographic scales across the United States by mapping large areas with similar biotic and abiotic characteristics into *ecoregions*. Ecoregions are areas where the type, quality, and quantity of environmental resources—such as vegetation, wildlife, soils, geology, climate, hydrology, land use, and land form—are generally similar (U.S. Environmental Protection Agency 2017). Ecoregions serve as a spatial framework for resource management and are effective for regional state environmental reports, resource inventories, and assessments. The EPA has mapped and described ecoregions in a hierarchical scheme that includes Levels I, II, and III ecoregions, with Level I providing the coarsest environmental resource information over the largest geographic areas and Level III providing the most refined environmental resource information over the smallest geographic areas. The EPA further mapped a Level IV ecoregion that subdivides the Level III ecoregion; however, no additional or refined vegetation community or species descriptions beyond Level III are provided for Level IV. Of the four ecoregion levels, Level III provides the most detailed information on typical or representative vegetation communities and plant species found throughout an ecoregion. Table E-1 in Appendix E lists the ecoregions and representative vegetation communities and species in the study area, and the states where each ecoregion occurs. Figure 3.2-1 shows each ecoregion's location and relative size in the study area.

Vegetation by Land Cover Type

The National Land Cover Database provides a means to quantify different land cover types in the study area and to provide some measure of the extent of different vegetation communities and plant species for the ecoregions within the study area. The land cover types that occur in the study area include barren land, cultivated crops, deciduous forest, developed (low, medium, and high intensity, and open space), emergent herbaceous wetlands, evergreen forest, grassland/herbaceous, mixed forest, open water, pasture/hay, shrub/scrub, and woody wetlands. Figure 3.2-2 displays the land cover in the study area. Table 3.2-1 shows the amount of land cover in the study area by state. Table E-2 in Appendix E provides the definition of each land cover type.

1 **Figure 3.2-1. Ecoregions in the Study Area**



2

1 **Figure 3.2-2. Land Cover in the Study Area**



2

Table 3.2-1. Amount of Land Cover in the Study Area by State (acres)

Land Cover	Arkansas	Oklahoma	Texas	Total
Barren Land	12,391	55,910	6,941	75,242
Cultivated Crops	139,964	1,284,675	182,387	1,607,027
Deciduous Forest	1,329,922	7,054,946	475,083	8,859,951
Developed, High Intensity	6,819	71,244	4,257	82,320
Developed, Low Intensity	78,094	322,497	59,919	460,510
Developed, Medium Intensity	19,718	152,958	9,893	182,569
Developed, Open Space	175,723	1,189,752	84,379	1,449,854
Emergent Herbaceous Wetlands	21,870	38,273	14,213	74,355
Evergreen Forest	1,137,084	1,097,386	138,659	2,373,128
Grassland/Herbaceous	226,285	6,609,180	375,814	7,211,279
Mixed Forest	384,448	366,853	41,859	793,160
Open Water	106,014	700,585	55,514	862,113
Pasture/Hay	1,010,172	4,991,766	709,900	6,711,837
Shrub/Scrub	194,794	241,225	107,536	543,555
Woody Wetlands	181,028	158,379	174,662	514,069
Total	5,024,326	24,335,628	2,441,016	31,800,970

Source: Homer et al. 2015

The dominant land cover types in the study area include deciduous forest, grassland/herbaceous, and pasture/hay. Other common land cover types include evergreen forests, cultivated crops, and developed open space. Limited areas of barren land and emergent herbaceous wetlands are also present. Dominant vegetation in the deciduous forest vegetation type typically includes post oak (*Quercus stellata*), blackjack oak (*Q. marilandica*), black hickory (*Carya texana*), mockernut hickory (*C. tomentosa*), and eastern red cedar (*Juniperus virginiana*). Dominant vegetation in the herbaceous grassland cover type typically includes little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), broomsedge (*A. virginicus*), Indiangrass (*Sorghastrum nutans*), goldenrod (*Solidago* spp.), Indian woodoats (*Chasmanthium latifolium*), and Virginia wildrye (*Elymus virginicus*). Dominant vegetation in the pasture/hay land cover type typically includes Bermudagrass (*Cynodon dactylon*), tall fescue (*Schedonorus phoenix*), giant ragweed (*Ambrosia trifida*), switchgrass (*Panicum virgatum*), broomsedge, little bluestem, big bluestem, and Johnsongrass (*Sorghum halepense*).

Invasive Plants

Invasive plants are plant species that are typically non-native, and whose introduction is likely to cause economic or environmental harm or harm to human health (EO 13112). Invasive plants can adversely affect vegetation communities by outcompeting native vegetation, leading to a reduction in biodiversity and degradation of habitat. Humans are the primary source of invasive plant introduction, and once established, invasive plants are often difficult to contain, control, and eradicate.

The Plant Protection Act of 2000 (7 U.S.C. 7701 et seq.) was enacted to prevent the importation, exportation, and spread of pests injurious to plants, and to provide for their control and eradication and for the certification of plants. This act consolidates related responsibilities that were previously

spread over various other laws such as the Plant Quarantine Act, the Federal Plant Pest Act, and the Federal Noxious Weed Act of 1974. The Plant Protection Act defines the term “noxious weed” as any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment (7 U.S.C. §7702). In accordance with the Plant Protection Act, the U.S. government has designated certain plants as noxious weeds (U.S. Department of Agricultural 2017a). Also, states have designated certain plants as legally noxious (U.S. Department of Agricultural 2017a).

Each state in the study area identifies and lists invasive plant species under statute or regulation (U.S. Department of Agricultural 2017b); Arkansas lists 35 species, Oklahoma lists 3 species, and Texas lists 28 species. Table E-3 in Appendix E contains the invasive plants listed under state statute or regulation for each state in the study area. In addition to invasive plant species listed under state statute or regulation, state resource agencies often establish their own non-regulatory invasive plant lists that the agency considers to be potentially harmful to resources they manage; these lists are often more extensive than the regulatory list of invasive plants.

Invasive plants are typically found in areas where the ground or soil has been disturbed, and are commonly found along transportation corridors (e.g., roads, highways, rail lines); utility corridors (e.g., transmission lines and pipelines); in residential, commercial, and industrial areas; around agricultural lands; and other developed, disturbed, or human-influenced areas. Figure 3.2-2 provides some insight into the locations in the study area that may have existing invasive plants or would have a higher potential or risk for the establishment and spreading of invasive plants. These vegetation cover classes include pasture/hay, cultivated crops, and the various developed classes, because they all include land disturbance activities that create conditions that increase the risk of establishment and spread of invasive plants.

3.2.2.2 General Fish and Wildlife

This section addresses fish and wildlife species that are considered common and are not identified by Federal or state agencies as at-risk species that require special management (i.e., not a special-status species). The discussion focuses on terrestrial species, because as discussed in Section 3.2.3.2, *General Fish and Wildlife*, potential impacts on aquatic species from Covered Activities would be minimal or avoided. Fish and wildlife species that are at risk and managed under special purpose statutes (e.g., the ESA) are defined as special-status species and are discussed in Section 3.2.2.4, *Special-Status Species*. Fish and wildlife species in the study area are described below by ecoregion. This section also briefly discusses State Wildlife Action Plans.

State Wildlife Action Plans

State Wildlife Action Plans are plans developed by a state for conserving wildlife and habitat before they become too rare or costly to restore. The State Wildlife Action Plans consider all wildlife species in a state, identify those species for which there is a conservation concern due to population trends and threats to habitat and the species (i.e., Species of Greatest Conservation Need), and describe strategies and actions which, if implemented, will stabilize or reverse the declines of those species.

Table 3.2-2 summarizes by animal class and state the number of Species of Greatest Conservation Need identified in Oklahoma's, Arkansas's, and Texas's Wildlife Action Plans. The state agencies responsible for developing and leading the plans in the study area include the following.

- Arkansas Game and Fish Commission
- Oklahoma Department of Wildlife Conservation
- Texas Parks and Wildlife Department

Table 3.2-2. Number of Species of Greatest Conservation Need by State in the Study Area

Animal Class	Arkansas	Oklahoma	Texas	Total
Amphibians	29	19	24	72
Arachnids	0	0	48	48
Birds	48	75	111	234
Fish	66	56	133	255
Insects	85	41	204	330
Mammals	19	31	92	142
Mollusks	44	21	73	138
Crustaceans (e.g., crayfish, isopods)	29	42	57	128
Other Invertebrates	42	4	52	98
Reptiles	14	23	48	85
Total	376	312	842	1,530

Source: U.S. Geological Survey 2017.

Common Wildlife

There are 11 Level III terrestrial ecoregions in the study area (see Section 3.2.2.1, *Vegetation*). Common or typical fish and wildlife species in these ecoregions are presented in Table E-4 in Appendix E. Common or typical wildlife species in the study area include white-tailed deer, coyotes, bobcats, rabbits, beavers, squirrels, raccoons, armadillos, black bears, foxes, skunks, turtles, salamanders, and many bird and fish species.

3.2.2.3 Covered Species

We are only considering incidental take authorization for ABB under the action alternatives. This section provides information on the ABB, including its status and range, habitat, threats, and occurrence in the study area.

The ABB is the largest carrion¹ beetle in North America, reaching 1.0 to 1.8 inches in length (Backlund and Marrone 1997). The ABB is black with orange-red markings.

The ABB is a nocturnal species active in the summer months (active season) when ambient nighttime air temperatures consistently exceed 60 degrees Fahrenheit (°F) (U.S. Fish and Wildlife Service 1991). They are most active from 2 to 4 hours after sunset (Walker and Hoback 2007). During the daytime, ABBs are believed to bury themselves in vegetation litter.

¹ Carrion is decaying flesh of dead animals.

Individuals typically live for 1 year. Adults and larvae are dependent on carrion for food and reproduction. The ABB may also capture and consume insects (Scott and Traniello 1989). Adult ABBs burrow into the soil during the inactive season (winter months) when ambient nighttime air temperatures consistently fall below 60 °F (U.S. Fish and Wildlife Service 1991). In Oklahoma, this typically occurs for approximately 8 to 9 months from late September until mid-May (U.S. Fish and Wildlife Service 2015a). The length of the active and inactive periods, however, fluctuates with temperature. Recent studies indicate ABBs in Arkansas burrow to depths ranging from 0 to 8 inches during the inactive season (Schnell et al. 2007). Others have reported overwintering depths ranging from 0 to 27 inches (Hoback 2011).

Status and Range

The Service listed the ABB under the ESA as endangered in 1989 (54 FR 29652). The most recent species review found the ABB remains endangered throughout its current range because of ongoing threats to known populations and the failure to discover or establish viable populations in the remaining recovery areas (U.S. Fish and Wildlife Service 2008a).

The historic range of the ABB included over 150 counties in 35 states, including most of temperate eastern North America and the southern portions of three eastern Canadian provinces. Documentation confirming the species' presence is not uniform throughout this broad historical range.

Currently, the ABB can be found in less than 10 percent of its historic range, with localized, extant populations known to occur in nine states (U.S. Fish and Wildlife Service 2008a), including the states in the Plan Area—eastern Oklahoma, western Arkansas, and northeastern Texas. Additionally, a reintroduced population on Nantucket Island off the coast of Massachusetts is stable, and a recent reintroduction attempt in Missouri in 2012 has reported successful broods. A re-introduction effort in Ohio is ongoing, but no overwinter survival of the introduced ABBs has been documented. Additionally, no viable or self-sustaining populations are known in Ohio.

Habitat

The ABB is a habitat generalist and its habitat requirements, particularly for reproduction, may not be fully understood at present. ABBs have been successfully live-trapped in several vegetation types including native grassland, grazed pasture, riparian forest, coniferous forest, and oak-hickory forest, as well as on a variety of soil types (Lomolino et al. 1995; U.S. Fish and Wildlife Service 2008a). Habitat requirements include soils suitable for the burial of carcasses; xeric, saturated, or loose sandy soils are not suitable (U.S. Fish and Wildlife Service 1991, 2008b).

Ecosystems supporting ABB populations are diverse and include primary forest, scrub forest, forest edge, grassland prairie, riparian areas, mountain slopes, and maritime scrub communities (U.S. Fish and Wildlife Service 2008a). The ABB readily moves between different habitats (Creighton and Schnell 1998; Lomolino et al. 1995). However, it is believed to have more selective breeding habitat (suitable soils and vegetation layer) compared to its feeding habitat. Soil conditions must be conducive to excavation by ABBs (Lomolino and Creighton 1996). Soil moisture is also a factor because ABBs die quickly when desiccated (dried) (Bedick et al. 2006). Soils in the vicinity of captures are all well drained and include sandy loam and silt loam, with a clay component noted at most sites. Level topography and a well-formed detritus layer at the ground surface are common (U.S. Fish and Wildlife Service 2008a).

While the ABB uses a wide variety of habitats, the Service currently believes areas exhibiting the following characteristics are unfavorable for use by ABB based on disturbance regime, vegetation structure, unsuitable soil conditions, and carrion availability (U.S. Fish and Wildlife Service 2016).

- Land that is tilled on a regular basis, planted in monoculture, and does not contain native vegetation.
- Pasture or grassland that has been maintained through frequent mowing, grazing, or herbicide application at a height of 8 inches or less.
- Land that has already been developed and no longer exhibits surficial topsoil, leaf litter, or vegetation.
- Urban areas with maintained lawns, paved surfaces, or roadways.
- Stockpiled soil without vegetation.
- Wetlands with standing water or saturated soils (defined as sites exhibiting hydric-soils and vegetation typical of saturated soils, and/or wetland hydrology).

Areas adjacent to wetlands and/or riparian areas may be used by the ABB (and are therefore not considered unfavorable for the ABB). These areas may be important for ABBs seeking moist soils during dry conditions.

Threats

Populations of the ABB have been extirpated from 90 percent of its original range. While the cause for the decline of this species is not clearly understood, it could be a result of habitat fragmentation, habitat loss, carcass limitation (i.e., reduced availability of optimally sized carrion), pesticides, disease, light pollution, interspecific competition for carcasses, or a combination of these factors. The ABB Recovery Plan (U.S. Fish and Wildlife Service 1991) and a 5-year Species Status Review (U.S. Fish and Wildlife Service 2008a) identify potential threats to the ABB, including disease/pathogens, pesticides, direct habitat loss and alteration, interspecific competition, loss of genetic diversity in isolated populations, increase in competition for prey, increase in edge habitat, decrease in abundance of prey, agricultural and grazing practices, and invasive species. The primary cause, however, has been habitat loss and fragmentation (U.S. Fish and Wildlife Service 1991).

Land use changes that fragmented native forest and grasslands and created edge habitats during the westward expansion of settlement in North America (such as the edge between forest and grassland, or grassland and cropland), in addition to the removal of top-level carnivores such as the grey wolf (*Canis lupus*) and eastern cougar (*Puma concolor*), caused a decrease of indigenous species and an increase in meso-carnivores that thrive in areas disturbed by humans. These species include American crow (*Corvus brachyrhynchos*), raccoon (*Procyon lotor*), red fox (*Vulpes fulva*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), feral cats (*Felis domesticus*), and other opportunistic predators (Wilcove et al. 1986). A number of these species, especially the raccoon and striped skunk, have undergone dramatic population increases over the last century (Garrott et al. 1993), and the coyote and opossum have expanded their ranges. These generalist predators have increased in abundance where edge habitats allow increased foraging opportunities (Ray 2000). Therefore, as habitat for species in the favored weight range for ABB reproduction decreased, populations of its predators increased, potentially further limiting ABB reproductive potential.

1 ABBs are attracted to artificial lighting (Kozol 1990), which can lead to disruptions of the species'
2 normal behavior patterns. The species has been shown to respond differently to varying light
3 sources, and ultraviolet or mercury vapor lights elicit stronger responses while sodium vapor lights
4 are the least attractive to ABBs (Anshutz et al. 2007).

5 The red imported fire ant (*Solenopsis invicta*) is a competitor for carrion and a potential source of
6 mortality for burying beetles when they co-occur at a food source (Warriner 2004). Scott et al.
7 (1987) studied *Nicrophorus carolinus*, a burying beetle closely related to the ABB, in Florida and
8 concluded the inability of this species to successfully bury carrion was due to red imported fire ant
9 interference. Collins and Scheffrahn (2005) noted that red imported fire ants may reduce ground-
10 nesting populations of rodents and birds. Of the states containing populations of the ABB, red
11 imported fire ants now occur in Arkansas, Oklahoma, and Texas, mainly in the Arkansas River valley
12 and southward (U.S. Department of Agriculture 2003).

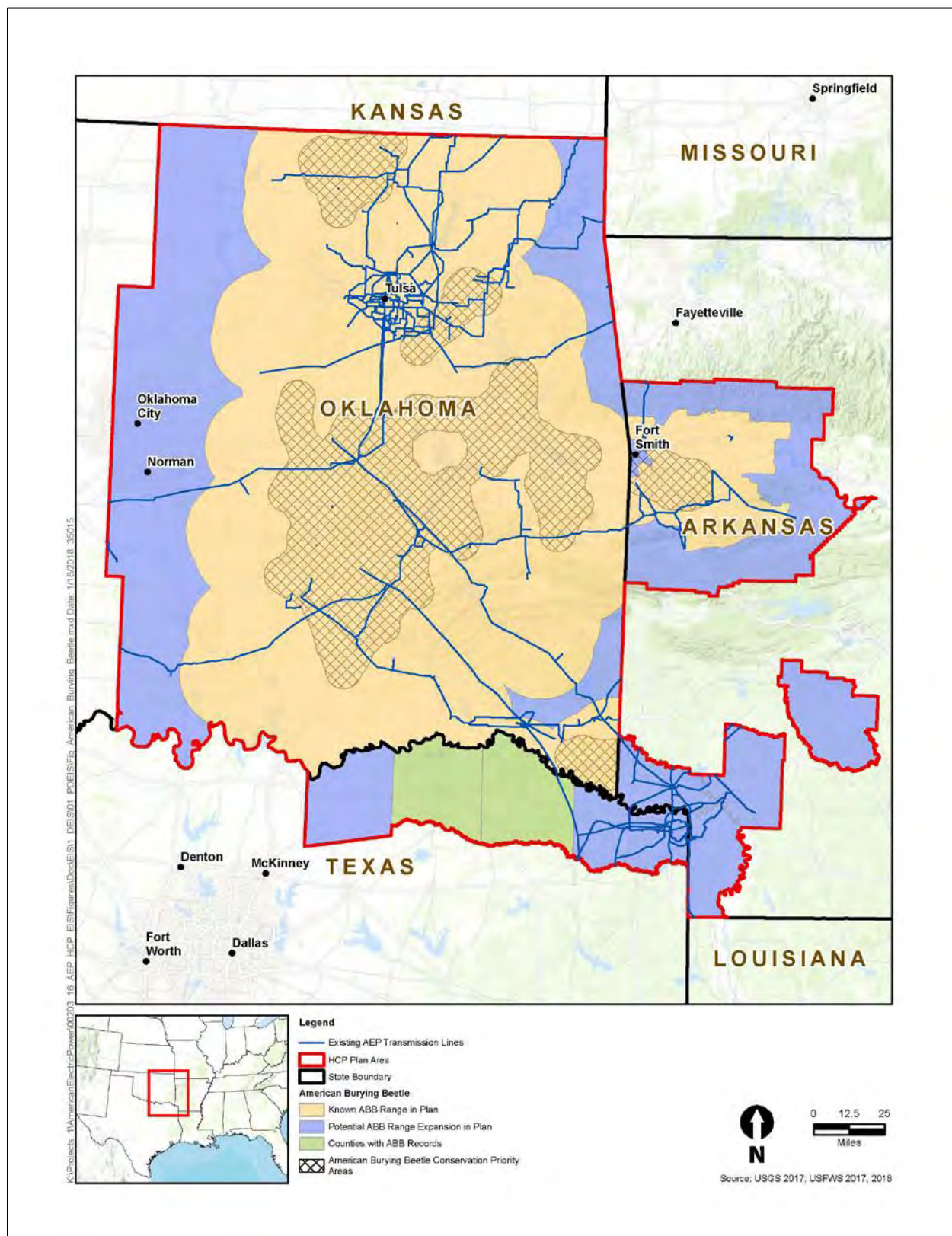
13 Fire may cause direct mortality of individuals during the ABB's active season (approximately May
14 through mid-September) (Howard et al. 2012), and can affect ABB habitat during the active or
15 inactive seasons through loss of habitat and loss of food sources.

16 Occurrence and Habitat in the Study Area

17 The current range of the ABB in the study area is shown on Figure 3.2-3. In Oklahoma, ABB range
18 includes all areas within 18.6 miles (maximum ABB movement recorded by Jurzenski et al. 2011) of
19 all documented ABB occurrences. The Service also considers portions of counties on the eastern
20 edge of Oklahoma that are not within 18.6 miles of a documented ABB occurrence as potential ABB
21 range, because of the potential for ABB habitat in these areas and previously documented ABB
22 locations in adjacent states. Part or all of the following counties are currently included in ABB range
23 in Oklahoma: Adair, Atoka, Bryan, Carter, Cherokee, Choctaw, Coal, Craig, Creek, Delaware, Garvin,
24 Haskell, Hughes, Johnston, Kay, Latimer, Le Flore, Lincoln, Love, Marshall, Mayes, McClain,
25 McCurtain, McIntosh, Murray, Muskogee, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee,
26 Payne, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, Rogers, Seminole, Sequoyah, Tulsa,
27 Wagoner, and Washington.

28 The Service has identified areas where conservation of the ABB should be targeted in Oklahoma and
29 Arkansas (Figure 3.2-3). These areas are called Conservation Priority Areas (CPAs). The ABB CPAs
30 serve as areas where conservation efforts should be focused and where higher ratios of mitigation
31 for impacts on ABBs should occur. The CPAs include areas with recent (within 10 years)
32 documented ABB presence the Service believes are likely to contain important elements for ABB
33 conservation, such as documented presence over multiple years; relatively high-density
34 populations; suitable breeding, feeding, and sheltering habitat; and carrion resources. Figure 3.2-3
35 also shows existing AEP electrical lines running through the ABB CPAs. There are 577 miles of
36 existing AEP electrical lines within the ABB CPAs.

37 The ABB was rediscovered in western Arkansas in 1992 and is known to occur in portions of
38 Crawford, Sebastian, Logan, Scott, Johnson, Yell, and Franklin counties. One of the largest known
39 ABB populations occurs at Fort Chaffee, which is located in Sebastian, Crawford, and Franklin
40 counties. Given ongoing and anticipated future survey efforts, ABB's known range may also expand
41 to Little River, Hempstead, Miller, and Clark counties.

1 **Figure 3.2-3. American Burying Beetle Range and Conservation Priority Areas**

2

In Texas, the ABB is only found in two counties: Lamar and Red River, both of which are included in the study area. The 2004 occurrence in Red River County is the most recent record (U.S. Fish and Wildlife Service 2014). The Lamar County population occurs on a military base, Camp Maxey (Texas National Guard), while the Red River County population is on a preserve, Lennox Woods, owned by The Nature Conservancy of Texas (NatureServe 2009). Texas Parks and Wildlife Department also recognizes Bowie and Fannin counties, both of which are also part of the study area, as containing suitable ABB habitat (Texas Parks and Wildlife Department 2016).

Section 3.2.2.1, Vegetation, lists the land cover types in the study area. Those land cover types in the study area that provide suitable ABB habitat include deciduous forest, evergreen forest, mixed forest, shrub/scrub, grassland/herbaceous, woody wetlands, emergent herbaceous wetlands, and pasture/hay (see Figure 3.2-2 and Table 3.2-1). Although portions of the woody wetlands and emergent wetlands are likely unsuitable for the ABB, portions of those areas are likely suitable, especially during dry periods. Those areas unsuitable for the ABB include open water, developed open space, developed low intensity, developed medium intensity, developed high intensity, barren land, and cultivated crops.

3.2.2.4 Special-Status Species

Special-status species are defined for the purposes of the EIS to include the following.

- Species listed as threatened, endangered, candidate, or proposed for listing under the Federal ESA (other than Covered Species).
- Species protected by a state threatened and endangered species statute or law.
- Migratory birds protected by the Migratory Bird Treaty Act.
- Bald and golden eagles protected by the Bald and Golden Eagle Protection Act.

This section also addresses critical habitat. As noted in Table C-2 in Appendix C, Arkansas, Oklahoma, and Texas have state laws that provide the state the authority to list a wildlife species as threatened or endangered.

Special-status species, excluding migratory birds of conservation concern, that occur or have the potential to occur in the study area are summarized in Table 3.2-3. Table E-5 in Appendix E includes migratory birds listed in *Birds of Conservation Concern 2008* that are known to occur in the study area. The list of special-status species includes the following.

- Forty-four threatened or endangered species listed under the ESA and/or by state law.
- One species that is a candidate for ESA listing.
- Bald eagle and golden eagle.
- Fifty-one migratory birds (in addition to those state-listed, federally listed, or protected by the Bald and Golden Eagle Protection Act) of particular conservation concern (i.e., Birds of Conservation Concern [U.S. Fish and Wildlife Service 2008c]).

The study area is located mainly in the Central Flyway migration corridor, which provides nesting, breeding, overwintering, and stopover habitat for a large diversity of migratory species, including grassland specialists, waterfowl, shorebirds, and passerine songbirds. Migration through the study

area generally begins in March with the movement of waterfowl, waterbirds, songbirds, raptors, and other bird species that overwinter in the southern United States and adjacent Mexico. In late April and May, the neotropical migrants that overwinter in Central and South America and the Caribbean islands arrive, along with shorebirds and the last of the raptor species. After the June–July breeding period, species migration reverses, with shorebirds among the earliest of migrants. September is the peak of the small perching bird migration, with raptors and waterfowl continuing into November.

The 1988 amendment to the Fish and Wildlife Conservation Act (16 U.S.C. §§ 661–667d) mandates the Service to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. *Birds of Conservation Concern 2008* (U.S. Fish and Wildlife Service 2008c) is the most recent effort to carry out this mandate. The overall goal of the report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities. Refer to Appendix E for migratory birds listed in *Birds of Conservation Concern 2008* that are known to occur in the study area.

Table 3.2-3. Special-Status Species that Occur or Have the Potential to Occur in Study Area^a

Species	Federal Status ^b	State Status		
		Arkansas	Oklahoma	Texas
Invertebrates				
Rattlesnake-master borer moth (<i>Papaipema eryngii</i>)	C			
Crustaceans				
Oklahoma cave crayfish (<i>Cambarus tartarus</i>)			E	
Mammals				
Black bear (<i>Ursus americanus</i>)				T
Gray bat (<i>Myotis grisescens</i>)	E	E		
Indiana bat (<i>Myotis sodalis</i>)	E	E		
Northern long-eared bat (<i>Myotis septentrionalis</i>)	T	E		
Ozark big-eared bat (<i>Corynorhinus (=plecotus) townsendii ingens</i>)	E	E		
Rafinesque's big-eared bat (<i>Corynorhinus rafinesquii</i>)				T
Birds				
Bachman's Sparrow (<i>Peucaea aestivalis</i>)	MBTA			T
Bald eagle (<i>Haliaeetus leucocephalus</i>)	BGEPA			T
Golden eagle (<i>Aquila chrysaetos</i>)	BGEPA			
Interior least tern (<i>Sterna antillarum athalassos</i>)	E, MBTA	E		E
Peregrine falcon (<i>Falco peregrinus</i>)				T
Piping plover (<i>Charadrius melodus</i>)	T	E		T
Red knot (<i>Calidris canutus rufa</i>)	T			
Red-cockaded woodpecker (<i>Picoides borealis</i>)	E			
Red-headed woodpecker (<i>Melanerpes erythrocephalus</i>)	MBTA	E		
Sprague's pipit (<i>Anthus spragueii</i>)	MBTA	E		
Whooping crane (<i>Grus americana</i>)	E	E		E
Wood stork (<i>Mycteria americana</i>)				T

Species	Federal Status ^b	State Status		
		Arkansas	Oklahoma	Texas
Reptiles				
American alligator (<i>Alligator mississippiensis</i>)	T	E		
Alligator snapping turtle (<i>Macrochelys temminckii</i>)				T
Northern scarlet snake (<i>Cemophora coccinea copei</i>)				T
Texas horned lizard (<i>Phrynosoma cornutum</i>)				T
Timber rattlesnake (<i>Crotalus horridus</i>)				T
Mollusks				
Arkansas fatmucket (<i>Lampsilis powellii</i>)	T	E		
Louisiana pigtoe (<i>Pleurobema riddellii</i>)				T
Neosho mucket (<i>Lampsilis rafinesqueana</i>)	E	E	E	
Ouachita rock pocketbook (<i>Arkansia wheeleri</i>)	E	E		
Pink mucket (<i>Lampsilis abrupta</i>)	E	E		
Rabbitsfoot (<i>Quadrula cylindrica cylindrica</i>)	T	E		
Scaleshell mussel (<i>Leptodea leptodon</i>)	E	E		
Southern hickorynut (<i>Obovaria jacksoniana</i>)				T
Spectaclecase (mussel) (<i>Cumberlandia monodonta</i>)	E	E		
Texas pigtoe (<i>Fusconaia askewi</i>)				T
Winged mapleleaf (<i>Quadrula fragosa</i>)	E	E		
Fishes				
Arkansas River shiner (<i>Notropis girardi</i>)	T	E		T
Black-sided darter (<i>Percina maculata</i>)			T	T
Blue sucker (<i>Cycleptus elongates</i>)				T
Creek chubsucker (<i>Erimyzon oblongus</i>)				T
Leopard darter (<i>Percina pantherina</i>)	T	E		
Long-nosed darter (<i>Percina nasuta</i>)			E	
Neosho madtom (<i>Noturus placidus</i>)	T			
Ozark cavefish (<i>Amblyopsis rosae</i>)	T	E		
Paddlefish (<i>Polyodon spathula</i>)				T
Shovelnose Sturgeon (<i>Scaphirhynchus platyrhynchus</i>)				T
Plants				
Earth fruit (<i>Geocarpon minimum</i>)	T			T
Harperella (<i>Ptilimnium nodosum</i>)	E			

Sources: U.S. Fish and Wildlife Service 2017b; Arkansas State Game and Fish Commission Code Book, Addendum Chapter P1.00; Oklahoma Department of Wildlife Conservation 2017; Texas Parks and Wildlife Department 2017.

^a The study area (Figure 1-1) includes 47 counties in Oklahoma, 4 counties in Texas, and 11 counties in Arkansas.

^b The table does not include all of the migratory birds protected by the Migratory Bird Treaty Act that use the study area. The migratory birds listed in the table are those identified by the U.S. Fish and Wildlife Service as "birds of conservation concern" (U.S. Fish and Wildlife Service 2008c).

T = Threatened; E = Endangered; C = Candidate Species; BGEPA = Protected by the Bald and Golden Eagle Protection Act; MBTA = Protected by the Migratory Bird Treaty Act

We have designated critical habitat for four species in the study area: Arkansas River shiner, Leopard darter, Neosho mucket, and rabbitsfoot (Table 3.2-4). Figure 3.2-4 shows the location of the critical habitat and its proximity to existing AEP infrastructure. As shown in the figure, existing AEP aboveground electrical lines span aquatic critical habitat.

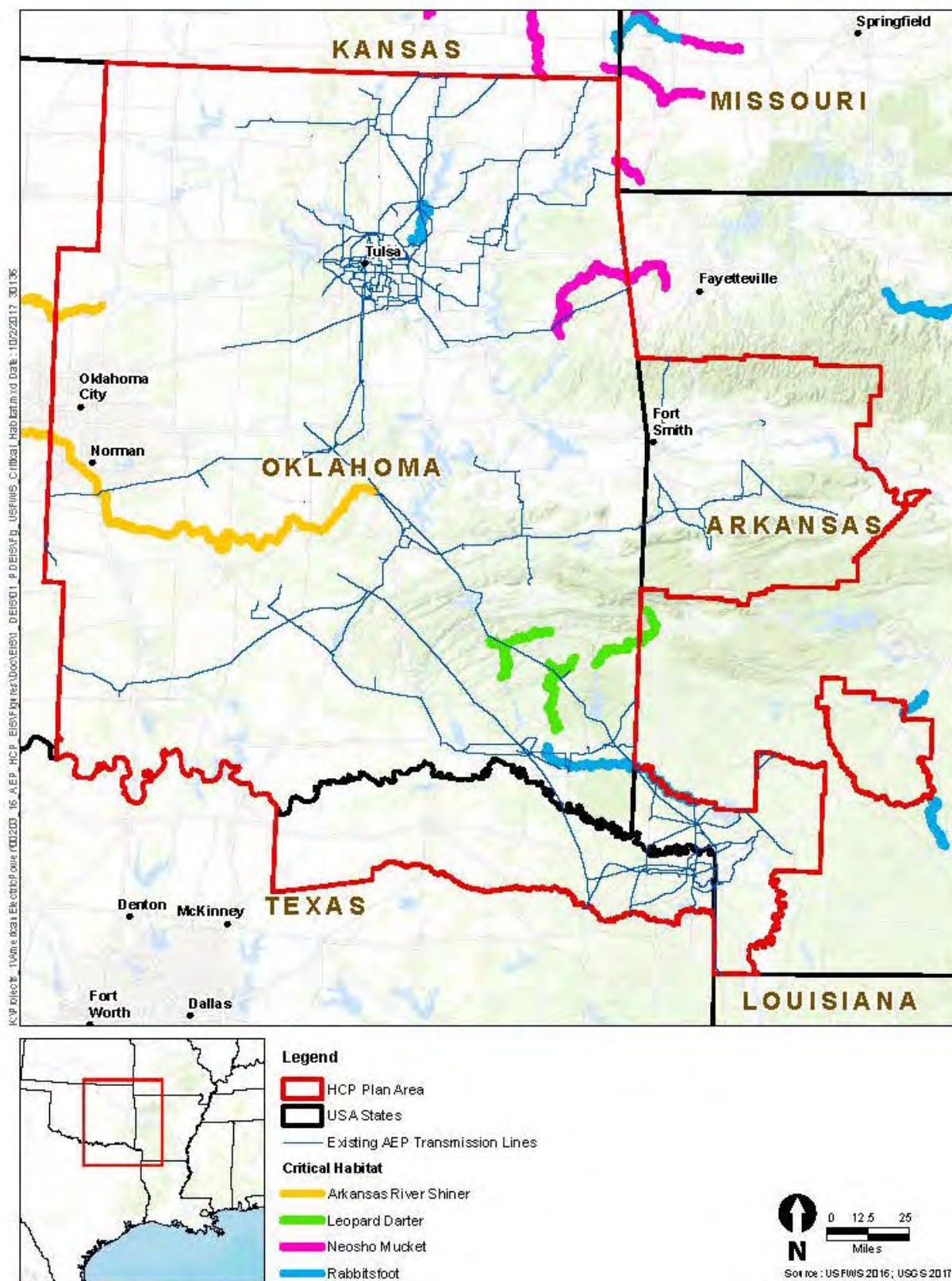
Table 3.2-4. Amount of Critical Habitat in the Study Area

Species	Arkansas	Oklahoma
		<i>Acres</i>
Arkansas River shiner (<i>Notropis girardi</i>)	0	16,260
Leopard darter (<i>Percina pantherina</i>)	0	4,942
		<i>Linear Miles</i>
Neosho mucket (<i>Lampsilis rafinesqueana</i>)	0	65
Rabbitsfoot (<i>Quadrula cylindrica cylindrica</i>)	35	147
Source: U.S. Fish and Wildlife Service 2017a		

3.2.3 Environmental Consequences

This section describes the potential direct and indirect impacts on the biological resources discussed in Section 3.2.2, *Affected Environment*, for Alternative B, the Proposed HCP. Due to the geographic breadth of the study area, and because the precise locations and timing of future Covered Activities are unknown, potential impacts are mostly discussed qualitatively. Impacts are quantified where suitable regional data are available.

Section 3.1, *Introduction*, describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area. Potential impacts on ABB from Alternative C are discussed further here. Impact mechanisms and types of impacts on ABB under Alternative C would be the same as those described for Alternative B. However, the amount of the overall Covered Activities conducted and the associated impacts and take would be less than Alternative B, because the activities and impacts would occur over a smaller area and for a shorter period of time. The estimated annual impact to occupied ABB habitat Alternative C's Plan Area would be approximately 63 percent ($= 19,975,548 \text{ acres} / 31,931,329 \text{ acres}$) of the impact under Alternative B because of the smaller Plan Area. Assuming the same estimated annual impact to occupied ABB habitat of 224.8 acres under Alternative B, this would amount to approximately 142 acres of occupied ABB impact per year across Alternative C's Plan Area. Further, the permit term of 20 years would be approximately 67 percent ($= 20/30$) of the impact authorized under Alternative B. Over the 20-year permit term, this impact to occupied ABB habitat would total 2,840 acres, which is 3,898 (or 58 percent) fewer acres of impact than in Alternative B.

1 **Figure 3.2-4. Location of Critical Habitat in the Study Area**

2

3.2.3.1 Vegetation

Vegetation impacts are described by identifying impact mechanisms associated with the Covered Activities. Operations and maintenance activities and new construction of transmission lines, substations, and access roads can affect vegetation by temporarily disturbing and permanently removing vegetation. The Covered Activities can also compact soil, contribute to the establishment and spread of invasive plants, and create and deposit dust, all of which can affect native plant growth. The severity of vegetation impacts discussed in this section would depend on the extent of operations and maintenance activities and new construction, and the abundance and type of the vegetation communities affected.

Temporarily Disturb and Permanently Remove Vegetation

Potential effects on vegetation would be short- and long-term and vary in intensity, depending on the activity (e.g., replacing a pole or installing new lines and substations). As discussed in Section 2.3.2.2, *Covered Activities*, and summarized in Table 2-1, operations and maintenance activities and new construction would temporarily disturb or permanently remove vegetation. Reconductoring may require vegetation clearing in a 15-foot width disturbance area under the line. Pole replacement and repair would temporarily disturb approximately 1,000 square feet of vegetation per pole. Emergency response and outage repair may result in ground disturbance similar to that of construction (assuming 1,000 feet of disturbance per event). Routine maintenance and inspection would involve minimal vegetation clearing. Routine vegetation maintenance includes weed control, pruning, and tree removal to ensure adequate clearance between vegetation and infrastructure. Installation of new aboveground electrical lines would involve vegetation clearing and ground disturbance within the right-of-way (ROW), which is assumed to average 125 feet wide across the study area. Road construction and improvement would require a 20-foot width disturbance, which clears and removes vegetation. Substation construction footprints range from 5 to 40 acres, with the typical substation disturbing 10 acres, of which 90 percent (9 acres) is permanent and 10 percent (1 acre) is temporary. Similarly, switching facility footprints typically results in up to 10 acres of disturbance, of which 90 percent (9 acres) is permanent and 10 percent (1 acre) is temporary. Table 3.2-5 shows the expected ground disturbance by the Covered Activities that are quantifiable over the course of the 30-year permit term. Construction of new lines and facilities constitutes the majority (approximately 90 percent) of land disturbance. In all cases, however, these impacts would be distributed widely across the entire study area and would occur whenever projects and operations and maintenance activities were implemented. For the purposes of the analysis, it is assumed these impacts would occur approximately evenly each year for the 30-year permit term.

Table 3.2-5. Total Estimated Ground Disturbance from the Covered Activities

Activity Type	Approximate Disturbance Annually (acres) ^a	Maximum Area Disturbed Over Permit Term (acres)
Operations and Maintenance of Facilities (Temporary Impacts)		
Reconductoring	8.0	241.4
Isolated pole replacement and repair	0.4	12.3
Emergency response and outage repair	1.0	31.1
Subtotal	9.4	284.8
Construction of Lines and Facilities (Permanent and Temporary Impacts)		
Aboveground electric lines	154.7	4,641.8
Road construction and improvement	0.8	24.8
Support facilities (substations and switching facilities)	46.0	1,378.6
Pole installations ^b	13.6	407.9
Subtotal	215.1	6,453.1
Total	224.8	6,737.9

^a Assumes equal proportion of impacts annually over permit term.

^b The HCP provides a combined disturbance area for all distribution line covered activities under one activity type titled "Pole Installation" (see HCP Table 4-3); ground disturbance for all covered activities for distribution lines is 407.9 acres. This number is included under the construction of lines and facilities activities in this table because it includes permanent and temporary impacts. The disturbance acreages for the rest of the covered activities in this table represent transmission lines only.

For new construction of electrical lines, direct effects from surface disturbances in the ROW would consist of temporary site preparation and construction activities. Impacts would include localized disturbance to vegetation, which includes individual plants and the seedbank, caused by construction equipment and vehicles during site preparation, including damage to vegetation from vehicle tires, trampling/crushing, excavation, grading, soil compaction, and soil stockpiling.

Long-term impacts on vegetation from new construction and pole replacement would be limited to conversion of woody vegetation to non-woody vegetation and loss of vegetation resulting from permanent conversion to developed areas. Vegetation would be permanently removed at each pole location, access road locations, substations and switching facilities, and permanent access associated with the substations and switching facilities. The footprint of the substations and switching facilities would require the permanent removal of all vegetation because the sites would be converted to utility use.

Woody vegetation would be cleared in the ROW where necessary to ensure safe and reliable operation of the electrical line. Clearing of woody vegetation typically includes removal of mature trees and low woody vegetation. Depending on the vegetation adjacent to these wooded areas, cleared woody areas would likely be converted to grasses or to vegetation similar to that found in adjacent areas. Clearing woody vegetation would have a long-term, high-intensity, localized effect because it would result in permanent vegetation conversion.

1 Direct, long-term impacts on vegetation from operations and maintenance activities would result in
2 the potential for loss or degradation of vegetation related to the use of access paths for operations
3 and maintenance activities and vegetation management. Impacts associated with operations and
4 maintenance activities would involve several of the same types of effects discussed for construction
5 activities. Direct impacts from operations and maintenance would result from ROW vegetation
6 management activities. Right-of-way vegetation management would only be required in areas where
7 tall vegetation may encroach on the electrical line.

8 As part of mitigating effects on ABB habitat, AEP would revegetate areas where Covered Activities
9 temporarily or permanently change ABB habitat. Vegetation removed or permanently damaged by
10 Covered Activities would be re-established with native species suitable for ABB, and may include
11 species similar to that of the surrounding area (typically warm season grasses) or of the same
12 vegetation type that existed prior to vegetation removal. If ground disturbance ends during the
13 winter when plants are dormant, bare soil would be temporarily stabilized, if necessary, to prevent
14 erosion by broadcasting cool season plant seeds (e.g., annual rye grass or wheat seed) and, where
15 necessary, using clean, weed-free wheat straw as mulch to protect seed and increase soil moisture.
16 These areas would be re-established at the beginning of the next growing season (preferably prior
17 to the start of the ABB active season in mid to late May).

18 For temporary vegetation impacts, ABB habitat would be re-established with low-growing
19 vegetation that existed prior to disturbance (mixed grass pasture, native grass and scrub/shrub, and
20 native grass pasture). Vegetation would be re-established to the original density (based on visual
21 comparison of before/after photographs and comparison to adjacent undisturbed areas) within 5
22 years of initial disturbance consistent with pre-disturbance conditions. For permanent vegetation
23 cover change impacts where pre-disturbance vegetation type cannot be restored within 5 years (e.g.,
24 forests), vegetation would be restored to a condition suitable for ABB use within 5 years of initial
25 disturbance. If revegetation and restoration of ABB suitable habitat is not achievable due to site
26 conditions within 5 years, AEP would mitigate for permanent habitat impacts for the portion of the
27 impacted area that remains unrestored. If AEP was required to conduct Covered Activities, such as
28 emergency response or outage repairs, on sites being restored prior to complete restoration but
29 following the initial impact (not to exceed 5 years), no additional mitigation (habitat mitigation
30 through provision of mitigation lands or conservation bank credits) would be required, so long as
31 these areas meet the restoration success criteria within 5 years of the initial impact. Once ABB
32 habitat is restored, future impacts in the same area would be considered a new impact and may
33 require additional mitigation consistent with the terms of the HCP.

34 **Constrain Plant Germination and Growth through Soil Compaction and Erosion**

35 The movement of heavy equipment and supplies during operations and maintenance activities and
36 new construction could compact the soil, affecting vegetation germination and growth. Soil
37 compaction occurs when soil particles are pressed together, reducing pore space between them.
38 Heavily compacted soils contain few large pores and have a reduced rate of both water infiltration
39 and drainage from the compacted layer. This occurs because large pores are the most effective in
40 moving water through the soil when it is saturated. In addition, the exchange of gases slows down in
41 compacted soils, causing an increase in the likelihood of root aeration problems. Also, a compacted
42 soil means that roots must exert greater force to penetrate the compacted layer (DeJong-Hughes et
43 al. 2001). Soil compaction from implementing Covered Activities would inhibit seed germination
44 and root penetration in the soil surface and could result in bare soil or sparsely vegetated areas.
45 Vegetation removal and soil compaction would expose soil to the erosive forces of rain and overland

stormwater runoff, causing sediment to smother vegetation within and beyond project footprints, especially in areas with steep terrain. These indirect, short-term impacts would be minimized through erosion and sediment controls implemented throughout the 30-year permit term.

One of the AMMs identified in the HCP to avoid or minimize effects on the ABB is to reduce erosion by implementing stormwater best management practices (BMPs). This AMM would also minimize impacts on plant growth. American Electric Power would ensure construction activities conform to state-approved, site-specific stormwater management plans using BMPs to control the volume, rate, and water quality of post-construction stormwater runoff. These practices may include erosion control measures such as silt fencing, hay bales, water bars, and other efforts to prevent washing away of topsoil, formation of gullies, or other soil erosion impacts to minimize impacts on the habitat.

Another AMM identified in the HCP that would minimize impacts on plant germination and growth is limiting the use of motor vehicles, machinery, or heavy equipment. American Electric Power would limit off-road use of motor vehicles and heavy equipment in occupied ABB habitat to that necessary to meet the objectives of the activity to minimize the potential for soil compaction. If heavy equipment, machinery, or motor vehicle use is required in occupied ABB habitat for a project or activity, these vehicles would be allowed only in the areas that are necessary for the required activity. For Covered Activities resulting in ABB habitat impacts, all motor vehicles, machinery, and heavy equipment would be parked within areas already affected, areas where disturbance is planned to occur, or areas where occupied ABB habitat impacts and mitigation, as appropriate, have been assessed. This AMM would minimize the amount of soil compaction and impacts on plant growth throughout the 30-year permit term.

As part of mitigating effects of Covered Activities, compacted soil in occupied ABB habitat would be restored by disking (mechanically breaking up) compacted soil in laydown areas and material storage areas where soil is compacted to relieve soil compaction and facilitate revegetation to restore soil conditions suitable for ABB use. This mitigation would not be required for small project areas (such as maintenance work on a power pole) where the use of tractors and disking equipment would create a larger impact area.

Contribute to the Spread of Invasive Plants

Construction activities could introduce and increase the spread of invasive plants in the following ways: 1) construction equipment could carry invasive plant seeds or plant parts from infested areas outside of the construction area into the construction area; 2) construction equipment could disturb existing invasive plant infestations in the study area and cause the spread of these infestations; 3) fill material containing invasive plants could be used; and 4) seed mixtures containing invasive plant seeds could be used for re-vegetating construction staging areas. Implementing common construction BMPs would minimize the potential for introducing invasive plants to the construction area.

Invasive plants can adversely affect vegetation communities by outcompeting native vegetation, leading to a reduction in biodiversity and degradation of habitats. Invasive plants are often more aggressive than native vegetation, and the disturbed conditions of a construction site create an environment (e.g., bare and compact soil, disturbed surfaces) where some invasive plants thrive. Invasive plants that encroach beyond construction footprints could outcompete native vegetation and result in altered vegetation structure, a reduction in plant species richness, and overall disruption of the plant ecosystem. Examples of noxious and invasive plant control measures that

could be implemented by AEP during implementation of Covered Activities include avoiding driving through invasive plant-infested areas to prevent spread, inspecting material sources used on the construction site to ensure they are invasive plant-free before use and transport, cleaning construction equipment and vehicles to prevent invasive plants from spreading or invading, and restoring the disturbed area before aggressive, invasive plants can become established.

One of the mitigation measures identified in the HCP is revegetating disturbed areas with native species suitable for ABB. Seeds used during vegetation re-establishment would be free of invasive species seeds. Invasive plant species could be introduced into the areas of restored ABB habitat. Should invasive plant infestations occur on sites where AEP is restoring ABB habitat to a greater degree than that of pre-disturbance conditions or adjacent land, AEP would work with the Service to develop and implement an invasive species control plan. Such a plan might include modification of methods used for vegetation management (e.g., cleaning equipment to reduce spread of invasive species) or capture or destruction of the invasive species through mechanical, biological, and, in carefully limited circumstances, chemical measures.

Affect Plant Growth through Dust Deposition and Accidental Spills

The operation of heavy construction equipment could generate fugitive dust from loose soil. Any accumulation of fugitive dust on vegetation could affect plant growth by inhibiting photosynthesis and reducing vegetation density and plant diversity. More tolerant native plant species could benefit from decreased competition. However, invasive plants could colonize and disrupt the overall plant ecosystem. The magnitude and duration of dust exposure, tolerance of native vegetation, and aggressiveness of invasive plants would determine vegetation response and the intensity of impacts.

Accidental release of contaminants during construction (short term) and operation and maintenance (long term), such as an inadvertent spill of gasoline, oil, or lubricants when fueling or storing construction equipment, could affect plant growth. Accidental releases of hazardous materials could impact plant communities in the vicinity of the spill. The magnitude of impacts would depend on the type and volume of material spilled, the location, and habitat affected. However, an uncontained spill of hazardous materials would likely be relatively small and affect a limited area because the volume of these materials that may be present at a construction location would be relatively small, and there would be no long-term storage of hazardous materials at construction locations. In addition, implementation of required spill prevention and response plans would limit potential impacts from a spill, should one occur. Also, one of the AMMs identified in the HCP is increasing safety during fluid use and storage. AEP would operate in compliance with all applicable state and Federal laws regarding fuel use and storage. This AMM would further limit the potential for plant impacts from an accidental release of a contaminant.

3.2.3.2 General Fish and Wildlife

Impacts on general fish and wildlife species are described by identifying impact mechanisms associated with the Covered Activities. The Covered Activities can affect fish and wildlife from or by removing, degrading, or fragmenting habitat; human disturbance; encounters with vehicles and construction equipment; collisions with project infrastructure (e.g., poles and electrical lines); contact with accidental release of contaminants; artificial lighting; and fire.

The impacts discussion focuses on terrestrial species because ABB does not occur in aquatic habitats (i.e., surface waters such as rivers, streams, creeks, ponds, lakes; and perennial wetlands), and by definition, Covered Activities would occur only in areas with positive ABB survey results or where

ABB presence is assumed (i.e., where take would occur and the area in which the ITP applies). Covered Activities that would disturb ground or affect vegetation in ABB habitat adjacent to surface waters, such as placement of transmission line towers that support an electrical line that spans a surface water, could cause some indirect impacts to surface waters (see Section 3.4, Water Resources), but would likely be avoided or minimized with best management practices and occur in isolated areas of the surface water.

Habitat Loss, Degradation, and Fragmentation

The Covered Activities would adversely affect wildlife by causing temporary and permanent habitat loss. Impacts on wildlife habitat would be short term and long term. As shown in Table 3.2-5, Covered Activities would disturb approximately 224.8 acres annually. The maximum total habitat disturbance over the 30-year permit term would be approximately 6,737.9 acres. These impacts would be distributed widely across the entire study area and would occur whenever projects and operations and maintenance activities were implemented. For the purposes of the analysis, it is assumed these impacts would occur approximately evenly each year for the 30-year permit term. All species groups would be affected to some degree, but impacts would likely be greater on bird populations because of the abundance and diversity of avian species that occur in the study area. Avian species occupying disturbed areas would likely move to suitable adjacent habitat. Wildlife habitat would be permanently removed at pole locations, substation and switching facility sites, and along permanent access roads. The electrical lines would not present a permanent barrier to wildlife species that use the surrounding areas, so effects from habitat fragmentation would be minimal. As noted in Section 3.2.3.1, *Vegetation*, AEP would revegetate ABB habitat that was disturbed. This mitigation measure would benefit other wildlife species that use ABB habitat.

Human Disturbance

Impacts on wildlife would include disturbances from operations and maintenance-related and new construction-related activities, such as the presence of construction personnel, presence and use of construction equipment (including helicopters), and noise from construction activities. These activities may disturb wildlife species in and adjacent to construction areas. Noise disturbances may occur beyond the ROW, particularly when helicopters are used, but impacts would generally be confined to the project area. These disturbances would likely affect all groups of species to some degree but may especially affect birds and mammals (Bayne et al. 2008; Francis and Barber 2013). Disturbances to wildlife associated with aboveground electrical line construction may result in disruptions in feeding, breeding, or sheltering behavior; increased energy expenditure spent fleeing approaching helicopters; and/or displacement of individuals (Bennett 1991; Bayne et al. 2008; Francis and Barber 2013). These disturbances could result in abandonment of individual wildlife nests, dens, territories, or burrows.

Disturbed wildlife species would likely occupy the abundant habitat available directly adjacent to the project area, and many would likely return to the area after construction, when personnel and equipment are no longer present. The magnitude of these impacts on individual species or groups of species would largely depend on the timing of construction activities relative to seasonal or diurnal occurrences.

Disruption of normal wildlife behaviors from Covered Activities could be minimized by avoiding sensitive times such as avian nesting and migratory seasons. For example, ROW clearing could be conducted outside the nesting period for migratory birds, generally from mid-March to mid-July.

1 Impacts on birds could be further minimized by conducting an onsite investigation to determine
2 whether any occupied nests are present prior to implementing a Covered Activity scheduled during
3 the nesting season. If active nests are found, construction activities would be delayed or the area
4 around the nest(s) left undisturbed until all active nests are no longer active.

5 **Encounters with Vehicles and Construction Equipment**

6 Mortality or injury to individuals may occur as a result of being crushed by construction and
7 maintenance equipment and vehicles. Crushing by construction equipment and vehicles would
8 primarily affect less mobile terrestrial species, such as small mammals, reptiles, and insects. Wildlife
9 species that occupy burrows may experience mortality if occupied burrows are collapsed or if
10 egress is prevented. These impacts would be limited to the ROW, access roads, and other sites where
11 equipment would be operated. The risk of wildlife mortality from crushing by construction
12 equipment and vehicles would result in short-term, adverse impacts.

13 **Collisions with Project Infrastructure**

14 The existing infrastructure, as well as construction of new aboveground electrical lines, would
15 present a long-term collision risk to birds, given its location in the Central Flyway migration
16 corridor, which includes high-use bird areas for overwintering, spring, and fall migrants, and nesting
17 migratory birds. Collisions with power lines represent a major source of bird mortality in the United
18 States (Manville 2005; Loss et al. 2014). A 2014 review compiled data from 14 previous studies and
19 determined collisions with transmission lines account for 8 to 57 million bird mortalities each year
20 in the United States, with an average value of approximately 20 million (Loss et al. 2014). However,
21 this is a broad-scale estimate, and regional rates of bird mortality due to power line collisions may
22 vary greatly.

23 Birds do not always readily recognize and avoid power lines, particularly when fleeing from a
24 perceived predator or when flying during poor visibility conditions. Collision risk varies among
25 avian species and depends on physiology and flight behavior, as well as weather and location of the
26 electrical lines in relation to high-use bird areas (Faanes 1987; Savereno et al. 1996; Bevanger
27 1998). Waterbirds, such as waterfowl and cranes, are particularly vulnerable to collision with power
28 lines (Faanes 1987; Manville 2005). Because of their size, body proportions, and flight styles, these
29 species require longer reaction times to avoid collisions compared to smaller, more agile birds
30 (Bevanger 1998).

31 Suitable habitat, such as wetlands, that attract more birds to the area near a power line would have
32 higher mortality rates. Avian collisions with power lines (distribution and transmission) are most
33 likely to occur when they cross migratory paths, bisect feeding and nesting or roosting sites, or
34 occur in or adjacent to major avian use areas. Power lines that cross rivers are known to cause
35 substantially higher avian mortality rates than power lines in agricultural habitats (Erickson et al.
36 2005).

37 An approach to reduce avian mortalities when a power line is located within or in proximity to a
38 wetland or other form of high-quality habitat is to “mark” the line with bird flight diverters (Avian
39 Power Line Interaction Committee 2012). Bird flight diverters increase power line visibility and can
40 serve to alert birds of a collision risk. When installed on power lines, bird flight diverters can reduce
41 avian mortalities by as much as 78 percent (Barrientos et al. 2011).

Spiral bird flight diverters are effective in reducing avian mortality from collision with power lines under daytime light conditions; however, other types of bird flight diverters may be more effective at night or during low-visibility conditions (Murphy et al. 2016). This is especially true for large migratory species (such as whooping cranes) that require greater reaction time to avoid collisions compared to smaller, more agile species (Murphy et al. 2016). Thus, one measure to minimize avian collisions with power lines is to install avian flight diverters with reflective and glow-in-the-dark surfaces to reduce avian collision in low-visibility conditions.

In 2005, the Avian Power Line Interaction Committee (APLIC) and the Service released guidelines (Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service 2005) for preparing APPs. An APP is a voluntary, utility-specific program to reduce the operational and avian risks that result from avian interactions with electric utility facilities. The goal of an APP is to reduce avian mortality. American Electric Power has developed and is implementing an APP (see Appendix E). This APP includes measures to avoid or minimize potential impacts of electrical lines and associated infrastructure, including, among other things, spiral bird flight diverters, aerial marker spheres, various flapping devices, and covers and perch diverters to prevent electrocution. AEP also uses suspended devices that clamp onto lines and either hang or swing and spin in the wind. Many of these suspended devices have reflective and glowing surfaces intended to enhance their visibility in low light and at night.

Contact with Accidental Release of Contaminants

Accidental release of contaminants during construction (short term) and operation and maintenance (long term), such as an inadvertent spill of gasoline, oil, or lubricants when fueling or storing construction equipment, could affect individual animals if the animal came in contact with the contaminant. However, an uncontained spill of hazardous materials would likely be relatively small and affect a limited area because the volume of these materials that may be present at a construction location would be relatively small, and there would be no long-term storage of hazardous materials at construction locations. In addition, implementation of required spill prevention and response plans would limit potential impacts from a spill, should one occur. Also, one of the AMMs identified in the HCP is increasing safety during fluid use and storage. American Electric Power would operate in compliance with all applicable state and Federal laws regarding fuel use and storage. This AMM would further limit the potential for impacts from an accidental release of a contaminant.

Artificial Lighting

American Electric Power does not anticipate conducting Covered Activities outside daylight hours, with the exception of emergency repair activities. However, should construction activities need to take place at night, they would require artificial lighting. When outages occur, AEP inspects the line to determine the location and probable cause of the outage for repair and restoration of circuits as quickly as possible.

The impact of artificial lighting on wildlife is relatively new and not fully understood. However, based on the research that is available and the importance of ambient light to animal behavior and physiology, it is likely artificial lighting can adversely affect wildlife (Rich and Longcore 2005; Stone et al. 2009; Kempenaers et al. 2010; Baker and Richardson 2006). Wildlife can be affected by artificial lighting in two main ways—disorientation and attraction/repulsion (Longcore and Rich 2004; Corre et al. 2002; Telfer et al. 1987). The disorientation of sea turtles and the attraction of

insects as a result of artificial lighting are common examples. Consequently, the addition of artificial lighting to an environment can alter foraging and reproductive behaviors, predator-prey interactions, habitat use, community structure, and physiology (Stone et al. 2009; Longcore and Rich 2004; Corre et al. 2002; Miller 2006; Beier 2005; Perry and Fisher 2005; Buchanan 2005; Eisenbeis 2005; Frank 2005). For example, bats have been shown to change foraging behavior, flight routes, and evening emergence times in response to artificial lighting (Stone et al. 2009; Beier 2005; Murphy et al. 2009; Patriarca and Debernardi 2010; Kuijper et al. 2008; Rydell 2005). Effects are likely species-specific, based on the role ambient light plays in physiology and behavior, and might also depend on the type of lighting used (Rich and Longcore 2005; Poot et al. 2008).

Any potential wildlife impacts from artificial lighting associated with the Covered Activities would be localized and short term, with the potential to occur only during emergency response activities (and any nighttime construction, which is not expected). One of the AMMs identified in the HCP to minimize impacts on the ABB is limiting the use of artificial lighting. This AMM would also minimize artificial lighting impacts on other wildlife species located within ABB habitat. The following guidelines would be followed from April 15 through October 15 to encompass the ABB active season, if necessary.

- Within occupied ABB habitat, AEP would down-shield necessary lighting associated with all operations or construction activities that extend beyond daylight hours to minimize the potential impact on ABBs, which would also minimize the impact on other wildlife species. Emergency response and outage repair situations are not required to down-shield lighting.
- Areas that are not identified as ABB habitat altogether would require no limits to artificial lighting.

Fire

Although the Covered Activities are not expected to cause a wildfire, during the drier seasons, or in dry conditions, off-road vehicle and heavy equipment use could increase the risk of wildfire. Wildfire could directly affect wildlife through loss of breeding, feeding, and sheltering habitat, and injury or mortality of individuals exposed to fire. One of the AMMs identified in the HCP is aimed at reducing the risk of motor vehicles sparking wildfire. American Electric Power would avoid, to the extent possible, parking motor vehicles, machinery, and heavy equipment where dry grass or vegetation could be ignited. All vehicles would be maintained according to the respective service manuals. In dry conditions, grass and debris would be cleaned away from machinery exhaust systems and bearings on a weekly basis. All bearings would be lubricated and all spark arrestors would be serviced as necessary to reduce risk of sparking a fire. American Electric Power would have a shovel and working fire extinguisher on site at each project location in case of accidental ignition of a wildfire.

3.2.3.3 Covered Species

Impacts on Covered Species (i.e., the ABB) are described by identifying impact mechanisms associated with the Covered Activities. The impact mechanisms include some of the same impact mechanisms described above for general wildlife and include others, as follows: habitat degradation (including soil disturbance, altered soil moisture, and erosion), human disturbance, vehicles and construction equipment, artificial lighting, predation, food availability, and fire. Soil disturbance,

which would result from multiple Covered Activities, is the impact mechanism expected to result in the majority of ABB take from direct mortality and habitat loss.

Habitat Degradation

Soil Disturbance

American burying beetles spend long periods of time relatively immobile and buried a few to several inches below the soil surface. As a result, physical disturbance and movement of soil by construction equipment during activities such as clearing, grading, and excavation may injure or crush ABBs (adults, larvae, and/or eggs during the active season; adults during the inactive season), or separate adult ABBs from their larvae or eggs. Soil disturbances that expose the brood chamber or overwintering adult ABBs may also result in mortality caused by desiccation, heat stress, or predation.

Altered Soil Moisture

Whereas direct disturbances can expose ABBs to rapid desiccation, vegetation cover change associated with vegetation removal and maintenance activities can result in a more gradual decrease in soil moisture content that may render it less suitable for ABB use. American burying beetles are known to be sensitive to changes in soil moisture and high temperature (Bedick et al. 2006). Clearing of vegetation and grading ROWs exposes soils to sun and wind and thereby may result in decreased soil moisture and elevated soil temperature (Russel 1940). Soil compaction from off-road vehicle and equipment travel also limits the soil's ability to hold moisture (Willemssens 2015). If vegetation maintenance reduces vegetation height to less than 8 inches, the soil may dry to the point that: (1) ABBs have difficulty burying carcasses, (2) soil may not structurally support reproductive chambers, or (3) adult or larval ABBs become desiccated (Bedick et al. 2006). Vegetation maintenance activities are most likely to adversely affect the ABB when areas are managed to maintain vegetation cover below 8 inches in height, such as mowing around poles and other AEP facilities, likely resulting in loss of soil moisture to the point of making these areas unsuitable for ABB habitat.

To minimize adverse effects from soil compaction, AEP would limit off-road use of motor vehicles and heavy equipment in occupied ABB habitat to those necessary to meet the objectives of the project or activity. If heavy equipment, machinery, or motor vehicle use is required in occupied ABB habitat for a project or activity, these vehicles would be allowed only in the areas that are necessary for the required activity. For Covered Activities resulting in ABB habitat impacts, all motor vehicles, machinery, and heavy equipment would be parked within areas already impacted, areas where disturbance is planned to occur, or areas where occupied ABB habitat impacts and mitigation, as appropriate, have been assessed the degree possible to reduce the potential for soil compaction and crushing ABBs and their brood chambers. Vehicles, machinery, and heavy equipment used for vegetation management in ROWs, if parked off-road in ABB potential habitat, would not be parked in the same area for more than one day during the same ABB active season.

One of the mitigation measures identified in the HCP involves restoring compacted soil created by Covered Activities in ABB-occupied habitat. Restoration would involve disking (mechanically breaking up) compacted soil in laydown areas and material storage areas where soil is compacted to relieve soil compaction and facilitate revegetation to restore soil conditions suitable for ABB use. This mitigation would not be required for small project areas (such as maintenance work on a power pole) where the use of tractors and disking equipment would create a larger impact area.

Erosion

Disturbance or vegetation clearing increases the susceptibility of soil to erosion. Deposition of eroded soils may bury ABB adults or broods (during the active season) or overwintering adults (during the inactive season) too deep for them to emerge. Conversely, erosion may expose ABBs (or adults or broods) to adverse environmental conditions if soils are washed or blown away.

To minimize the effects of erosion, construction activities would conform to state-approved, site-specific stormwater management plans using BMPs to control the volume, rate, and water quality of post-construction stormwater runoff. These practices may include erosion control measures such as silt fencing, hay bales, water bars, and other efforts to prevent washing away of topsoil, formation of gullies, or other soil erosion impacts to minimize the impacts on ABB habitat.

One of the mitigation measures identified in the HCP involves re-establishing vegetation removed or permanently damaged by Covered Activities with native species suitable for ABB, and may include species similar to that of the surrounding area (typically warm season grasses) or of the same vegetation type that existed prior to vegetation removal. If ground disturbance ends during the winter when plants are dormant, bare soil would be temporarily stabilized, if necessary, to prevent erosion by broadcasting cool season plant seeds (e.g., annual rye grass or wheat seed) and, where necessary, using clean, weed-free wheat straw as mulch to protect seed and increase soil moisture. These areas would be re-established at the beginning of the next growing season (preferably prior to the start of the ABB active season in mid to late May).

For temporary vegetation impacts, ABB habitat would be re-established with low-growing vegetation that existed prior to disturbance (mixed grass pasture, native grass and scrub/shrub, and native grass pasture). Vegetation would be re-established to the original density (based on visual comparison of before/after photographs and comparison to adjacent undisturbed areas) within 5 years of initial disturbance consistent with pre-disturbance conditions. For permanent vegetation cover change impacts where pre-disturbance vegetation type cannot be restored within 5 years (e.g., forests), vegetation would be restored to a condition suitable for ABB use within 5 years of initial disturbance. If revegetation and restoration of ABB suitable habitat is not achievable due to site conditions, AEP would mitigate for permanent habitat impacts (see discussion of off-site mitigation in Section 2.3.2.4, *Conservation Strategy*).

Human Disturbance

Introducing or increasing human presence and movement within or adjacent to ABB habitat may trample soil and vegetation, leading to habitat degradation and potential displacement of ABBs in the area. It is possible that human activity could lead to a decrease in direct mortality because ABBs may abandon the area. These impacts are not well understood, but are likely to be minimal in comparison to more intensive activities, such as soil disturbance, and would only occur when ABBs are above ground during the active season.

Vegetation maintenance in ABB habitat may disturb individuals of the species and alter their normal behavior. To minimize these potential effects, AEP would limit vegetation maintenance frequency and duration to that necessary to allow for visual inspection, prevent hazards, and comply with AEP's ROW and overhead electric line vegetation clearing standards. In non-affected areas or areas with temporary or permanent cover change impacts where ABB habitat has been restored, AEP would not mow herbaceous vegetation more than once per year to maintain soil moisture. Woody-stemmed vegetation (trees, shrubs, and existing stumps) may be cut as close to the ground as

possible in compliance with AEP's Forestry Manual. The mowing and vegetation trimming equipment AEP uses to maintain ROW vegetation typically leaves mulch in affected areas to minimize erosion and help maintain soil moisture in these areas.

Another AMM identified in the HCP to minimize effects of human disturbance is personnel training. A training program would be implemented for all personnel conducting or supervising Covered Activities that would disturb ABB occupied habitat (i.e., that would result in ground disturbance). Construction personnel would be given a presentation annually or prior to initiating Covered Activities that focuses on identifying the ABB and the requirements of the HCP that are applicable to construction personnel. During Covered Activities other than emergency response and outage repair, personnel would be instructed to report any observed ABBs or their larvae to the project manager or environmental inspector, remove all food wastes from the ROW each day, and prohibit dogs or cats on the ROW (workers may not bring animals onto the ROW). Project managers or environmental inspectors would report the sitings to the appropriate Service Ecological Services Field Office. American Electric Power would post signs at all access points to the project area identifying areas of ABB occupied habitat and reminding workers to follow special restrictions in the area.

Vehicles and Construction Equipment

Accidental release of operational fluids (fuel, oil, or other fluids for maintenance of equipment) may adversely affect an ABB if it is exposed to the fluid. To avoid or minimize this effect, AEP would operate in compliance with all applicable state and Federal laws regarding fuel use and storage.

Off-road travel by vehicles and heavy equipment could result in physical injury or mortality of ABBs that collide with or are crushed by moving vehicles. These impacts have a low probability of occurrence due to the dispersed nature of the activity and sheltering habits of the ABB, but would be most likely to occur when ABBs are active on or above the ground surface.

More research is needed to further assess the conditions under which off-road vehicle travel can result in crushing of buried ABB. Research by Willemssens (2015) found that pick-up trucks parked or driven can result in a significant increase in soil compaction, up to 2.58 kilograms per square centimeter when parked overnight, which resulted in mortality in *Nicrophorus marginatus* and *N. carolinus* beetles. The author suggests that, based on the ABB's larger size and greater burial depth than the *Nicrophorus* beetles tested, 3 kilograms per square centimeter is a conservative compaction level for considering risks to ABB. This level of compaction is unlikely to be created from driving pick-up trucks, or even parking them all day. Heavy equipment, because it generally has more tires or tracks to better distribute weight, actually results in less soil compaction. Willemssens (2015) tested a Nebraska Public Power line truck that weighed about 30,000 kilograms and had 14 tires that, when driven over soil, did not result in a significant change in compaction.

Routine maintenance and inspections and vegetation management are not expected to result in repeated off-road vehicle travel or parking longer than a day, but may result from reconductoring, pole replacement, and new construction activities. Adverse impacts are most likely to occur in areas where vehicles are parked or frequently travelled (pressure is exerted for a longer period of time, resulting in greater compaction) and for vehicles with less ground contact in proportion to the overall vehicle weight (tires have less surface area to distribute vehicle weight, resulting in greater compaction) (Willemssens 2015). Unless remediated, soil compaction could render soil unsuitable for excavation and carcass burial in the long term. Additionally, ABB larvae and eggs have limited to

no mobility and therefore may be unable to escape after soil compaction events. These conditions could result in ABB mortality and habitat degradation or loss.

In summary, the type of off-road vehicle travel and temporary parking required for AEP's inspections, repairs, and vegetation management by pick-up trucks and other heavy equipment could result in mortality of ABB, depending on soil type, burial depth, and other environmental factors. However, based on the limited amount of research that exists, mortality would be impossible to quantify.

Artificial Lighting

Many groups of insects have been shown to be attracted to lights, including beetles (Longcore and Rich 2004). Although circumstantial evidence suggests artificial lighting may adversely affect ABBs, its influence on overall population declines is thought to be minimal in comparison to other factors (Sikes and Raithel 2002). Artificial light sources occurring during the active season may attract ABBs, which could result in take through collision or crushing by equipment. Attraction to artificial lighting used during nighttime construction can disorient ABBs (U.S. Fish and Wildlife Service 1991) and may make them more susceptible to predation. The ABB was the most frequent active, nocturnal beetle caught in lighted traps during a 2007 field study in Nebraska (Anshutz et al. 2007). The study concluded that foraging ABBs were more affected by light (particularly ultraviolet light) than other species of carrion beetles. Light sources are not expected to affect ABBs during the inactive season, as ABBs are not above ground during that time period.

If artificial lighting at night is needed, the following guidelines would be followed from April 15 through October 15 to encompass the ABB active season (i.e., summer months).

- Within occupied ABB habitat, AEP would down-shield necessary lighting associated with all operations or construction activities that extend beyond daylight hours to minimize the potential impact on ABBs. Emergency response and outage repair situations would not implement down-shield lighting.
- Artificial lighting would not be limited outside of ABB habitat.

Predation

Increased edge habitat created by transmission ROW vegetation clearing and maintenance may increase direct predation on ABBs by some vertebrate scavengers (Jurzenski and Hoback 2011). Changes in soil composition, either by disturbing soil horizons or by importing soil, could indirectly affect the ABB by importing pests such as the red imported fire ant. Fire ants are voracious predators and evidence exists that overall arthropod diversity declines in their presence (Porter and Savignano 1990).

Food Availability

Food availability may decrease when human development fragments ABB habitat, changing the composition and lowering the reproductive success of prey species, and increasing the prevalence of scavengers, such as American crows, skunks, northern raccoons, foxes, and coyotes (Wilcove et al. 1986; U.S. Fish and Wildlife Service 1991; Marvier et al. 2004), which compete with the ABB for carrion (Ratcliffe 1996; Amaral et al. 1997; Bedick et al. 1999). Additionally, fragmentation can reduce the carrion prey base of appropriate size for ABB reproduction (Oxley et al. 1974). However,

the creation of additional edge in landscapes that are already fragmented does not necessarily lead to adverse impacts on the species.

Interspecific competition for resources could also increase if human activity displaces individual ABBs from the study area to new areas. This displacement could also result in a potential increase in exposure to avian and mammalian predators. Such impacts are difficult to quantify and describe, but are expected to be short term.

Fire

During the drier seasons, or in dry conditions, off-road vehicle and heavy equipment use could increase the risk of wildfire. Although highly unlikely to result from AEP's activities, wildfire could directly affect the ABB through loss of breeding, feeding, and sheltering habitat; alteration of the small mammal community (for a period of time) to a less optimal size class for optimal ABB reproduction (Kirchner et al. 2011); and injury or mortality for individuals exposed to fire.

AEP would avoid, to the extent possible, parking motor vehicles, machinery, and heavy equipment where dry grass or vegetation could be ignited. All vehicles would be maintained according to the respective service manuals. In dry conditions, grass and debris would be cleaned away from machinery exhaust systems and bearings on a weekly basis. All bearings would be lubricated and all spark arrestors would be serviced as necessary to reduce risk of sparking a fire. AEP would have a shovel and working fire extinguisher on site at each project location in case of accidental ignition of a wildfire.

Estimated Take

The HCP estimates acres of occupied habitat affected (removed or temporarily disturbed) by the Covered Activities as a proxy for estimating take of ABB individuals (HCP Section 4.3, *Estimated Incidental Take and Impacts of the Taking*). "Occupied ABB habitat" is defined as (1) suitable for ABB use (containing ABB habitat) and (2) within the effective survey radius of a valid ABB survey where ABBs were identified or ABBs are assumed present in lieu of surveys. The HCP's take analysis uses a framework consistent with the *American Burying Beetle Impact Assessment for Project Reviews* (U.S. Fish and Wildlife Service 2016) with some additional assumptions to address the uncertainty in the location and timing of Covered Activities.

The HCP estimates that 85.1 percent of the impact area from Covered Activities would occur within suitable ABB habitat, and 20 percent of this impact area would affect or would be assumed to affect occupied ABB habitat and require take authorization. Table 3.2-6 provides the estimated impact to occupied habitat from the Covered Activities over the 30-year permit term. The estimated amount of total impact to occupied habitat—6,737.9 acres—would function as a cap on allowable ABB take under the ITP. The average annual estimated impact area in ABB habitat (1,064.4 acres) from the Covered Activities would affect less than 0.01 percent of ABB potential habitat in the study area (over 27 million acres). Approximately 20 percent or less of this impact area is estimated to be occupied ABB habitat (224.8 acres) and thus permitted under the HCP.

Table 3.2-6. Estimated Impact to Occupied American Burying Beetle Habitat under Alternative B (Acres)

Activity Type	Average Annual Impact Area	Average Annual Impact in ABB Habitat ^a	Estimated Annual Impact to Occupied Habitat ^b	Estimated Impact to Occupied Habitat over the Permit Term ^c
Operations and Maintenance of Existing Facilities				
Reconductoring	47.3	40.2	8.0	241.4
Isolated pole replacement and repair	2.4	2.1	0.4	12.3
Emergency response and outage repair	1.2	1.0	1.0	31.1
Construction of New Lines and Facilities				
Aboveground electric lines	909.1	773.6	154.7	4,641.8
Road construction and Improvement	4.8	4.1	0.8	24.8
Support facilities (substations and switching facilities)	270	229.8	46.0	1,378.6
Pole installations ^d	16.0	13.6	13.6	407.9
Total^e	1,250.8	1,064.4	224.8	6,737.9

^a Estimate based on the assumption that 85.1 percent of the Covered Activities would occur in land cover that is potential ABB habitat.

^b Estimate based on the assumption that 20 percent of the non-emergency response and non-distribution Covered Activities occurring in suitable ABB habitat would occur in occupied habitat and thus require take authorization. Emergency response and outage repair and distribution activities in ABB potential habitat would assume 100 percent occupancy, so 100 percent of impact in potential habitat is estimated to result in take.

^c Estimate based on 30-year permit term.

^d The HCP provides a combined disturbance area for all distribution line covered activities under one activity type titled "Pole Installation" (see HCP Table 4-3); ground disturbance for all covered activities for distribution lines is 407.9 acres. This number is included under the construction of lines and facilities activities in this table because it includes permanent and temporary impacts. The disturbance acreages for the rest of the covered activities in this table represent transmission lines only.

^e Numbers may not total exactly due to rounding error in the HCP impact database.

ABB = American burying beetle

Take of ABBs and impacts to their habitat are not anticipated to negatively affect the population locally or throughout its range, or to result in an adverse effect on the long-term conservation of the species. Avoidance and minimization measures are designed to reduce direct take from mortality. For unavoidable impacts to ABB habitat, the HCP's mitigation would offset impacts through the protection, enhancement, and management in perpetuity of habitat for the ABB according to Service-established mitigation ratios designed to offset the impact of unavoidable incidental take. The mitigation measures are anticipated to more-than offset effects to individual ABBs or their habitat.

3.2.3.4 Special-Status Species

The impact mechanisms for special-status species are the same as those discussed for general fish and wildlife species: removal, degradation, or fragmentation of habitat; human disturbance;

encounters with vehicles and construction equipment; collisions with project infrastructure (e.g., poles and electrical lines); contact with accidental release of contaminants; artificial lighting; and fire.

Because the potential impacts on special-status species depend on the particular species (as opposed to a general discussion of wildlife impacts), the impact discussion is organized by type of special-status species rather than by impact mechanisms.

Federally Listed and State-Listed Species

As noted in Section 3.2.3.2, *General Fish and Wildlife*, impacts on aquatic species and habitats would be minimal (insignificant or discountable) or avoided because Covered Activities would not occur in aquatic habitat. Thus, Alternative B would have minimal, if any, impacts on aquatic critical habitat and the aquatic federally listed and state-listed species in Table 3.2-3: one species of crayfish, 11 species of mollusks, and 10 species of fish. In addition, as stated in Section 3.4.3.1, *Surface Waters*, should AEP require the placement of permanent fill or structure directly within a surface water (e.g., transmission line tower footing) and outside the areas where the ITP would apply, AEP would need to obtain all necessary Federal permits (e.g., CWA Section 404, 401 Water Quality Certification), that require separate NEPA compliance by the U.S. Army Corps of Engineers (Corps). The remaining 22 terrestrial federally listed and state-listed species could be affected by Covered Activities in the same manner discussed above for general wildlife species.

Mammals

The black bear (*Ursus americanus*) (state-listed in Texas) has been recorded in the study area's four Texas counties: Fannin, Lamar, Red River, and Bowie (Texas Parks and Wildlife Department 2005b). If present near a project site, the black bear would likely leave the area during implementation of the Covered Activities. Due to the large amount of habitat available in the study area, permanent removal of vegetation and vegetation maintenance is not expected to adversely affect the black bear. No adverse effects on the black bear are expected.

The federally listed Indiana bat (*Myotis sodalis*) and northern long eared bat (*M. septentrionalis*) and the state-listed (Texas) Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) could be affected by habitat loss or artificial light. Right-of-way clearing could result in the removal of trees that could provide habitat for maternity colonies. The loss of these trees could result in long-term, adverse effects on the bats, especially if a maternity colony was removed. Operation and maintenance activities may result in short- and long-term adverse effects on the bats. Similarly, emergency repairs could result in impacts on maternity colonies. Vegetation management of trees in the ROW could remove potential roost habitat. Also, bats have been shown to change foraging behavior, flight routes, and evening emergence times in response to artificial lighting (Stone et al. 2009; Beier 2005; Murphy et al. 2009; Patriarca and Debernardi 2010; Kuijper et al. 2008; Rydell 2005). It is unknown where the impacts may occur and not possible to determine the magnitude or degree of impact.

Regarding the northern long eared bat, the Service published a final 4(d) rule that accompanied the final listing for the northern long eared bat on January 14, 2016 (81 Federal Register 1900). The take prohibitions of the final 4(d) rule apply to areas in an identified white-nose syndrome (WNS) zone, which represents all counties that contain or are located within 150 miles of documented cases of WNS or documented presence of the fungus that causes WNS. For all areas of the country outside the WNS zone, there are no prohibitions on incidental take as per the final 4(d) rule. In the WNS zone, the final 4(d) rule prohibits incidental take of northern long-eared bats occurring: 1) in

known hibernacula, 2) as a result of removing a known occupied maternity roost tree or removing trees within 150 feet of a known occupied maternity roost tree during the pup season from June 1 through July 31, or 3) as a result of removing trees from within 0.25 mile of a hibernaculum at any time of year.

Several of the Oklahoma counties and all of the Arkansas counties in the study area are located within the WNS zone (U.S. Fish and Wildlife Service 2017c). American Electric Power would not remove trees in areas located in the WNS zone during the pup season (June 1–July 31) to ensure compliance with the final 4(d) rule. American Electric Power would also be cognizant of any future expansions of the WNS zone, which could affect timing of Covered Activities throughout the permit term. American Electric Power is working with the Service on a separate HCP to provide take authorization for listed and potentially listed bats throughout AEP's service territory, including the study area for this HCP.

The Covered Activities are not likely to affect the gray bat (*M. grisescens*) and Ozark big-eared bat (*C. townsendii ingens*) because these are cave-dwelling species. However, if artificial lighting was used near a cave (e.g., during emergency repair activities), it is possible individual bats of these two species could be disturbed during nighttime feeding. Any potential impacts would be temporary.

Birds

Potential impacts on federally listed and state-listed birds would be the same as those discussed in Section 3.2.3.2, *General Fish and Wildlife*. Bald and golden eagles and migratory birds are discussed separately below. American Electric Power would minimize impacts on birds by measures identified in their APP.

Reptiles

The American alligator is the only federally listed reptile in the study area. It is listed in one county in the study area: McCurtain County, Oklahoma. The alligator spends most of its time in the water. While in the water, Covered Activities would not affect the species because standing water is unsuitable ABB habitat. If an American alligator were encountered on land in occupied ABB habitat and during Covered Activities, the alligator would likely move into the water. Project personnel would not approach the alligator and would wait until the alligator had left the area before continuing activities. Potential effects include disrupting feeding or resting behavior. Any effects on the American alligator would be temporary and insignificant.

The other special-status reptile species in the study area are state-listed by Texas and include: alligator snapping turtle (*Macrochelys temminckii*), northern scarlet snake (*Cemophora coccinea copei*), Texas horned lizard (*Phrynosoma cornutum*), and timber rattlesnake (*Crotalus horridus*). Potential effects on the alligator snapping turtle, which spends most of its time in standing water, would be similar to those described for the American alligator. Potential effects on the two snake species and the lizard would be similar to those described in Section 3.2.3.2, *General Fish and Wildlife*.

Invertebrates

The rattlesnake-master borer moth (a Federal candidate species) is restricted to mesic prairies and associated wetlands with a large amount of the rattlesnake master plant. In the study area, it is known at one site in Osage County, Oklahoma. Also, in 2017, it was discovered in prairie and open woodlands/savanna in the following Arkansas counties in the study area: Franklin, Logan, Sebastian,

1 Scott, and Yell (Fowler 2017). Due to its restricted range and limited occurrence in the study area,
2 the Covered Activities are not expected to affect this species.

3 **Plants**

4 There are two federally listed plant species in the study area: Earth fruit (*Geocarpon minimum*) and
5 harperella (*Ptilimnium nodosum*). Earth fruit is federally listed in two of the study area's Arkansas
6 counties: Franklin and Sebastian. Geocarpon prefers eroded areas in grasslands called "slicks" or
7 "slickspots" (bare soil over sandstone). Harperella is federally listed in two of the study area's
8 Arkansas counties—Scott and Yell—and two of the study area's Oklahoma counties—Le Flore and
9 McCurtain. Harperella is found only on sunny, rocky, or gravel shoals and margins of clear, swift-
10 flowing stream sections in the Ouachita Mountains. There is no Federal take prohibition for plants
11 located on private property. Potential effects on these two plant species include injury or mortality.
12 However, given their limited distribution and habitat requirements, and the low probability of ABB
13 occurring in this habitat, it is highly unlikely Covered Activities would affect these two plant species.
14 Pre-construction surveys would help avoid impacts on these plant species. If individual plants are
15 identified, project design could be adjusted to avoid affecting the plants.

16 In summary, the likelihood that the Covered Activities would adversely affect non-covered federally
17 or state-listed species is highly project specific. American Electric Power does not believe the
18 Covered Activities would result in take of these species. If non-covered federally listed species have
19 the potential to be affected by future AEP activities, these effects would be addressed in separate
20 ESA compliance documents, such as through the ESA section 7 consultation process (if there is a
21 Federal nexus) or a separate HCP that covers a larger portion of AEP's service territory. Therefore,
22 under Alternative B, AEP would be required to avoid all take of non-covered federally listed species.
23 AEP would also be required to comply with state regulations and requirements for state-listed
24 species (Oklahoma and Texas), which may include implementing additional AMMs if suitable habitat
25 for state-listed species is present in an area that would be disturbed.

26 **Bald and Golden Eagles**

27 The state of Oklahoma is well-known as a wintering area for bald eagles. Bald eagles begin arriving
28 in Oklahoma in November and early December. Their numbers peak in January and February, and
29 most birds have left for their northern breeding grounds by the end of March (Oklahoma
30 Department of Wildlife Conservation 2011a). However, not all bald eagles leave the state to breed.
31 Many bald eagles nest in Oklahoma (Sutton Center 2017). Bald eagles are a common site at lakes and
32 reservoirs. Lakes in the study area with reported high concentrations of bald eagles include Kaw,
33 Keystone, Texoma, Tenkiller, Ft. Gibson, Grand, Tishomingo, and Spavinaw (Oklahoma Department
34 of Wildlife Conservation 2011a).

35 In Arkansas, the bald eagle can be found in any county (U.S. Fish and Wildlife Service 2015b).
36 December through February are peak bald eagle months. In the study area, bald eagles occur along
37 the Arkansas River and near Millwood and De Gray Lakes. In Texas, bald eagles nest from October to
38 July. In the study area, bald eagles occur along the Red River in northeast Texas.

39 Golden eagles can be found throughout the United States, with breeding occurring primarily in the
40 western United States, Canada, and Alaska (Kochert et al. 2002); and outside of the study area. Two
41 to four nesting pairs of golden eagles occur in Oklahoma, all in the western edge of the panhandle in
42 the vicinity of Black Mesa (Oklahoma Department of Wildlife Conservation 2011b), which is outside
43 the study area. In Texas, golden eagles occur in the western part of the state year-round (Texas A&M

2007). This area is also outside the study area. In Arkansas, there are records of golden eagle occurrences in northwest Arkansas in the study area, including in Sebastian, Scott, Yell, Little River, Hempstead, Clark, Logan and Franklin counties. However, of these counties, Yell and Logan county occurrences are the only ones within the last 10 years. Overall, golden eagle presence in the study area is considered scarce (Kochert et al. 2002).

Direct construction effects on bald eagles during Covered Activities may include displacement and loss of habitat in areas where bald eagle habitat overlaps with likely occupied ABB habitat. The presence of construction crews and equipment and associated noise may temporarily displace bald eagles, particularly if the Covered Activities are conducted near major river corridors or lakes. Although displacement from construction activities may temporarily disrupt bald eagle foraging behavior, the displacement would be limited to the ROW, and ample undisturbed, adjacent habitat would remain available for foraging. Depending on where infrastructure is sited, direct effects on bald eagles from new construction activities could also result in the permanent loss of nesting, roosting, or foraging habitat. The timing and location of Covered Activities is currently unknown. Potential direct construction effects on golden eagles during Covered Activities would be generally similar to those described for bald eagles, but because golden eagles are not known to breed in the study area and nonbreeding golden eagles are considered scarce in the study area, Covered Activities would have a low potential to affect golden eagles.

Direct effects on eagles from operations could include electrocutions or collisions with electrical lines, potentially resulting in injury or death of individuals from impact trauma. However, AEP's APP includes measures to avoid impacts on bald and golden eagles (Section 3.2.3.2, *General Fish and Wildlife*). In addition, AEP's compliance with the *National Bald Eagle Management Guidelines* (U.S. Fish and Wildlife Service 2007) would also minimize impacts on bald eagles that may nest near a particular AEP project. Assuming AEP's compliance with the *National Bald Eagle Management Guidelines* and implementation of measures identified in their APP, it would be unlikely that an eagle take permit would be required to implement the Covered Activities. Further, because golden eagles are considered scarce in the study area, operations would have a low potential to affect golden eagles.

AEP would implement the following measures to avoid and minimize potential effects on eagles.

- Conduct a bald eagle survey during the spring prior to any planned Covered Activities to ensure no new bald eagle nests have been constructed within 0.5 mile of the project area; if a new occupied bald eagle nest is identified during the pre-construction survey, construction would not be allowed within 0.5 mile of the occupied nest during the bald eagle nesting season (February 1 through August 31).
- Design new projects to adhere to APLIC and AEP standards to eliminate the risk of collisions with power lines and eagle electrocution
- Install bird flight diverters and other measures to minimize impacts, according to APLIC (Avian Power Line Interaction Committee 2012) and AEP standards.
- Require construction personnel to remove all trash, which may attract scavenging eagles to construction areas.

Migratory Birds

Potential impacts on migratory birds would be the same as discussed in Section 3.2.3.2, *General Fish and Wildlife*. To avoid or minimize impacts on nesting migratory birds, AEP would conduct pre-construction migratory bird surveys to determine whether any occupied nests are present. If active nests are found, construction activities would be delayed or the area around the nest(s) left undisturbed until the nest(s) is no longer active.

3.3 Climate and Air Quality

This section describes the existing climate and air quality conditions in the Plan Area. Climate is influenced by variations in latitude, elevation, topographic features, and moisture levels, including effects of surface water bodies. Air quality is generally influenced by the quantities of pollutants released within and upwind of the area, and can be highly dependent on the chemical and physical properties of the pollutants. Air quality standards and regulations limit the allowable quantities that may be emitted (see Appendix C). The topography, weather, and land use in an area also affect how pollutants are transported and dispersed and the resulting ambient concentrations.

3.3.1 Approach and Methodology

Climate in the Plan Area is described using National Climatic Data Center and EPA literature. Climate impacts are assessed in terms of the likely GHG emissions associated with project activities. Impacts are assessed at a programmatic level because the characteristics of individual actions that may be proposed and implemented in the Plan Area are not known.

Air quality in the Plan Area is described using EPA GIS data. The data were overlain with the Plan Area to describe the NAAQS and indicate the portions of the Plan Area where air quality is of concern, as indicated by those locations designated nonattainment or maintenance areas. Air quality impacts are assessed by determining any instances where emissions from Covered Activities could lead to a violation of a NAAQS. The study area for climate encompasses the Plan Area but is described in the context of the influence of regional and global meteorology and climatic trends. Climate is characterized in this section by describing climate trends and projections globally and discussing the current climate for the Plan Area. The air quality study area encompasses the Plan Area, as well as all nonattainment and maintenance areas that overlap the Plan Area to account for construction and operations-related air pollutant emissions that may occur.

3.3.2 Affected Environment

Climate in the Plan Area varies by state. Large portions of Oklahoma (southern and eastern), Arkansas, and Texas are heavily influenced by the warm, moist air moving from the Gulf of Mexico, resulting in higher humidity and precipitation than the rest of the Plan Area (northern Oklahoma) (National Oceanic and Atmospheric Administration 2017b, 2017c). In the Plan Area, average temperatures range from 62 degrees Fahrenheit in the south, 58 degrees in the north, 62 degrees in the east, and 56 degrees in the west (National Oceanic and Atmospheric Administration 2017b, 2017c). Across the Plan Area the distribution of rainfall sharply decreases from east to west—the western portion, in central Oklahoma, averages 17 inches of precipitation per year, while the eastern portion of the Plan Area averages 56 inches per year (National Oceanic and Atmospheric Administration 2017b, 2017c). A buildup of greenhouse gases (GHGs) in the atmosphere is

changing Earth's energy balance and causing the planet to warm, which in turn affects sea levels, precipitation patterns, cloud cover, ocean temperatures and currents, ocean acidification, polar snow and ice accumulation, and other climatic conditions. Scientists refer to this phenomenon as *global climate change*. The U.S. Global Change Research Program (2014) projects that by 2100, temperatures within the United States could increase by 4 to 8 degrees Fahrenheit.

Air Quality

Air quality conditions are characterized by measuring ground-level ambient (outdoor) pollutant concentrations. Measured concentrations are compared to the NAAQS (See Appendix C). The most important measured pollutants are the *criteria pollutants* indicated in the appendix. Criteria pollutants are air contaminants commonly emitted from a variety of sources and include CO, Pb, NO₂, O₃, PM₁₀, PM_{2.5}, and SO₂. Primary standards are set at levels to protect public health, including the health of sensitive populations (such as asthmatics, children, and the elderly) with a margin of safety. Secondary standards are set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. States also have established ambient air quality standards, which generally are the same as or similar to the NAAQS. State air quality agencies maintain monitoring stations that measure air pollutant levels. Figure 3.3-1 depicts the locations of air quality monitors for criteria pollutants in the study area. Air quality in the entire study area is in compliance with the NAAQS.

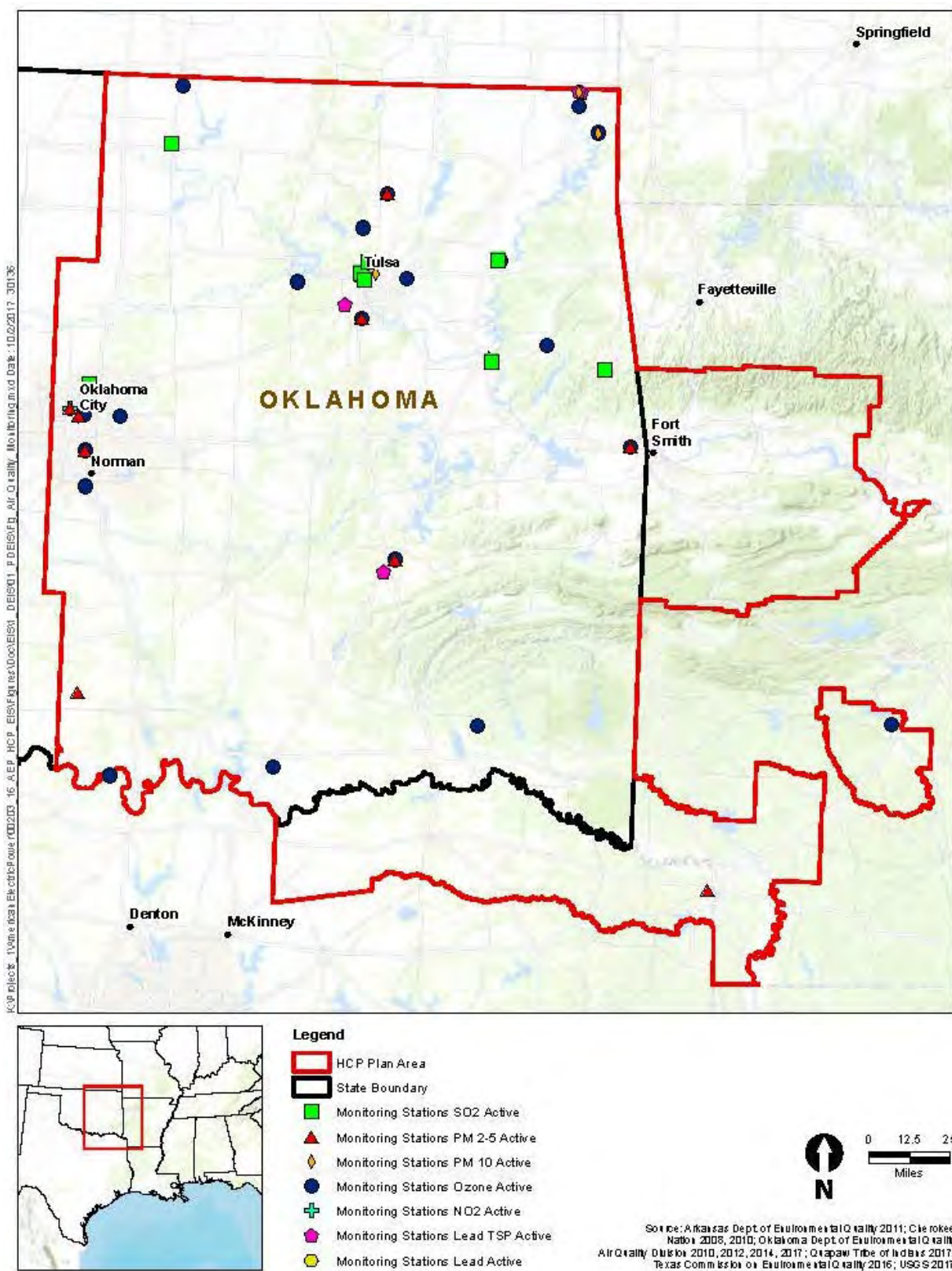
3.3.3 Environmental Consequences

Climate impacts are assessed in terms of the likely GHG emissions associated with Covered Activities. The primary GHGs are CO₂, CH₄, N₂O, and several industrial gases. Impacts are assessed at a programmatic level because the characteristics of individual actions that may be proposed and implemented in the Plan Area are not known. Impacts from operations and maintenance of existing facilities and construction of electrical lines and facilities are discussed separately for each alternative and are qualitatively described. Impacts on climate from HCP implementation activities (i.e., ABB habitat protection, restoration, and management) would be negligible and, therefore, are not described below. Section 3.1.2 describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area.

Air quality impacts are assessed in terms of the likely direct and indirect emissions associated with Covered Activities, including operations and maintenance of existing facilities and construction of electrical lines and facilities. Impacts on air quality from HCP implementation activities would be negligible and, therefore, are not described below. Impacts are assessed at a programmatic level because the characteristics of individual actions that may be proposed and implemented in the Plan Area are not known. Any anticipated instances where these emissions could lead to a violation of a NAAQS are identified and described qualitatively.

3.3.3.1 Impacts from Alternative B: Proposed HCP

Construction activities include using vehicles and equipment that generate GHG emissions and air pollutants. Emissions would occur intermittently depending on the work schedule and the specific equipment in use. Construction emissions likely would not cause a violation of ambient air quality standards or have a considerable impact on long-term air quality in the region. The vehicles and equipment typically used during each phase are summarized below.

1 **Figure 3.3-1. Air Quality Monitoring Stations**

2

Typical construction activities would include clearing vegetation, grading the site, spreading base material, adding 1.5 inches of topping rock, drilling foundations, and installing electrical equipment. The typical equipment used in the site preparation phase would include chainsaws, chippers, dozers, scrapers, graders, end loaders, trucks, and rock drills. Typical equipment used during construction would include cranes, loaders, backhoes, dozers, heavy trucks, and trenchers. Smaller equipment such as mixers, vibrators/compactors, and concrete pumps also may be used.

Construction activities would generate criteria pollutants, volatile organic compounds (VOCs), and HAPs from engine exhaust, and fugitive dust from disturbed earth surfaces. The greatest potential for emissions and adverse air quality impacts would occur during site preparation when soil disturbance and earthwork is greatest, producing fugitive dust, and the intense use of heavy equipment over a short time period, producing relatively high exhaust emissions.

Vehicles and equipment associated with regular site inspections, as well as maintenance activities, emergency response, and outage repair would produce exhaust emissions of criteria pollutants, VOCs, HAPs, and GHGs. These vehicles would include boom trucks, semi-trucks, cranes, and other heavy trucks. Occasionally off-road vehicles and helicopters would be required. Moving vehicles and equipment used for inspections and maintenance would generate small amounts of fugitive dust. Applying lubricants and greases during routine maintenance could emit very small quantities of VOCs. Routine testing of diesel-fueled emergency generators (typically 50 hours or fewer, annually) would produce a small amount of exhaust emissions and exhaust GHGs, as might the operation of heating systems for offices and maintenance shops. These emissions are not likely to violate ambient air quality standards or have a noticeable impact on long-term air quality or climate change in the region.

To the extent that changes in climate in the Plan Area would include increased occurrence of severe weather, project facilities and infrastructure could be subjected to increased stress from high winds and extreme temperatures and precipitation. Project facilities would be designed to withstand predicted severe weather conditions and, therefore, are not expected to be affected by changes in the climate of the Plan Area.

3.4 Water Resources

This section describes water resources—surface waters, floodplains, and wetlands—potentially affected by the proposed action and alternatives.

3.4.1 Approach and Methodology

3.4.1.1 Surface Waters

Existing surface water conditions in the study area are quantified, described, and summarized by overlaying water resources GIS data with the study area and existing AEP transmission lines. The U.S. Geological Survey (USGS) Watershed Boundary Dataset (U.S. Geological Survey 2015) was used to determine the area of watershed resource regions and subregions within the study area. The National Hydrography Dataset (NHD) (U.S. Environmental Protection Agency and U.S. Geological Survey 2012) was used to determine the extent of surface water features in the study area. The NHD maps the surface water drainage network of the United States and includes streams, rivers, canals, ponds, lakes, and reservoirs. The GIS analysis used the NHD to generate miles of streams and rivers

and acres of waterbodies (ponds, lakes, reservoirs) in the study area; these data were tabulated and summarized by watershed resource region and state. The NHD GIS analysis also generated the number of surface waters crossed by existing transmission lines in the study area.

Surface water quality in the study area is described using state Clean Water Act (CWA) 305(b) surface waters reports and the 303(d) lists of impaired waters. The CWA requires all states to assess and describe the quality of its waters in a report called the 305(b) report. In this report, states assign designated uses (e.g., fish consumption, public water supply) to all surface waters within the state. For surface waters where pollution controls do not maintain relevant water quality standards for designated uses, states must list these waters as impaired (i.e., placed on the state's 303(d) list). To address surface water quality in the study area, the 303(d) streams and waterbodies were summarized by linear miles (streams and rivers) and acres (waterbodies) by state using a GIS overlay analysis. The GIS analysis also generated the number of impaired surface waters crossed by existing transmission lines in the study area.

3.4.1.2 Floodplains

Floodplains in the study area are described using two GIS data sources: Federal Emergency Management Agency (FEMA) floodplain mapping data (Federal Emergency Management Agency 2017) and Natural Resources Conservation Service (NRCS) soil data (Natural Resource Conservation Service 2017). FEMA develops Flood Insurance Rate Maps, the official maps on which FEMA delineates special flood hazard areas for regulatory purposes under the National Flood Insurance Program. Special flood hazard areas are also known as 100-year floodplains, or areas that have a 1-percent annual chance of flooding.

Because not all communities (e.g., cities and counties) participate in the National Flood Insurance Program, and because not all floodplains contain insurable structures, the FEMA floodplain mapping data are not comprehensive of all floodplains. For this reason, NRCS soil data are also used to estimate the amount of flood-prone soils in the study area. Soils with the following NRCS flood frequency classifications were selected to estimate the extent of floodplains in the study area: rare, occasional, frequent, and very frequent (Natural Resource Conservation Service 2013).

- **Rare** flooding is unlikely but possible under unusual weather conditions; there is a 1- to 5-percent chance of flooding in any year or nearly 1 to 5 times in 100 years.
- **Occasional** flooding is expected infrequently under usual weather conditions; there is a 5- to 50-percent chance of flooding in any year or 5 to 50 times in 100 years.
- **Frequent** flooding is likely to occur often under usual weather conditions; there is more than a 50-percent chance of flooding in any year (i.e., more than 50 times in 100 years), but less than a 50-percent chance of flooding in all months in any year.
- **Very frequent** flooding is likely to occur very often under usual weather conditions; there is more than a 50-percent chance of flooding in all months of any year.

The FEMA and NRCS GIS data were overlain with the study area to quantify and describe floodplains by state. The GIS analysis also generated the linear feet of floodplains crossed by existing transmission lines in the study area.

3.4.1.3 Wetlands

Wetlands in the study area are described using National Wetlands Inventory (NWI) GIS data (U.S. Fish and Wildlife Service 2017). The NWI classifies wetlands using the Cowardin et al. (1979) wetland classification system. This classification system covers all wetlands and deepwater habitats, including wetlands, streams, and other nonwetland surface waters (e.g., ponds and lakes). The NWI data were overlain with the study area to quantify and describe wetlands and deepwater habitats by state. The GIS analysis also generated the number of wetlands and deepwater habitats crossed by existing transmission lines in the study area.

3.4.2 Affected Environment

3.4.2.1 Surface Waters

Surface waters include rivers, streams, creeks, lakes, ponds, and reservoirs. Surface water is maintained by precipitation and is lost through evaporation, seepage into the ground, or use by plants and animals. Typical beneficial surface water uses include drinking water, public supply, irrigation, agriculture, thermoelectric generation, mining, and other industrial uses.

Hydrology and Watershed Information

The study area includes a portion of three watershed resource regions and 11 subregions (Figure 3.4-1). Approximately 97 percent of the study area is within one watershed resource region – the Arkansas-White-Red. Approximately 118,639 miles of streams and rivers, and 856,050 acres of waterbodies (ponds, lakes, and reservoirs) are found within the study area (Table 3.4-1). Existing AEP transmission lines cross 4,434 streams and rivers, and 23 miles of waterbodies.

Water Quality

Designated beneficial water use of streams and waterbodies vary between the three states in the study area. Table 3.4-2 lists the specific designated beneficial uses for each state in the study area.

The Federal CWA requires that all states assess surface water quality and list any surface water under Section 303(d) for which beneficial uses are impaired by pollution. Table 3.4-3 summarizes the total linear distances of rivers and streams and areas of waterbodies that are listed as CWA 303(d) impaired in the study area by state. The water quality impairments vary across the study area. In Arkansas, the designated use most affected by impairments in streams and waterbodies is fisheries, and the most common impairments are dissolved oxygen, temperature, and siltation/turbidity. The most common impairments in Oklahoma streams and rivers are enterococcus, lead, and dissolved oxygen; in waterbodies common impairments include turbidity, lead, mercury, and dissolved oxygen. In Texas the designated use most affected by impairments is aquatic life use and recreation use.

Existing AEP transmission lines in the study area cross 201 streams and rivers listed as impaired, including 10 crossings in Arkansas and 191 crossings in Oklahoma. Five waterbodies crossed by existing transmission lines are listed as impaired, including one in Texas and four in Oklahoma.

1 **Figure 3.4-1. Watershed Resource Regions in the Study Area**

2

Table 3.4-1. Linear Distances of Streams and Rivers and Areas of Waterbodies in the Study Area

Water Resource Region by State	Linear Distance of Streams and Rivers (miles)	Area of Waterbodies (acres)
Arkansas-White-Red		
Arkansas	14,237	89,440
Oklahoma	92,638	700,053
Texas	8,268	54,545
Lower Mississippi		
Arkansas	3,415	11,620
Oklahoma	0	0
Texas	0	0
Texas-Gulf		
Arkansas	0	0
Oklahoma	0	0
Texas	81	392
Total	118,639	856,050

Source: U.S. Environmental Protection Agency and U.S. Geological Survey 2012.

Table 3.4-2. Designated Beneficial Uses of Surface Waters in the Study Area by State

Arkansas	Oklahoma	Texas
<ul style="list-style-type: none"> • Fish consumption • Fisheries • Primary contact • Secondary contact • Domestic water supply • Agriculture and/or industrial water supply 	<ul style="list-style-type: none"> • Aesthetic • Agriculture • Fish consumption^a • Warm water aquatic community • Navigation • Primary body contact recreation • Public/private water supply • Emergency water supply^b • Secondary body contact^b 	<ul style="list-style-type: none"> • Aquatic life use • Recreation use • Recreational beaches • General use • Fish consumption use • Public water supply use • Oyster waters use

Sources: Oklahoma Department of Environmental Quality 2014a; Arkansas Department of Environmental Quality 2016a; Texas Commission on Environmental Quality 2015.

^a For lakes only – includes cool water aquatic community and habitat limited aquatic community subcategories.

^b Lakes only.

Table 3.4-3. CWA 303(d) Impaired Surface Waters in the Study Area by State

State	Total Length of Impaired Streams and Rivers (miles)	Total Area of Impaired Waterbodies (acres)
Arkansas	310	2,972 ^a
Oklahoma	4,967	709,596
Texas	75	18,051 ^b
Total	5,352	730,619

Sources: Oklahoma Department of Environmental Quality 2014b; Arkansas Department of Environmental Quality 2016b; Texas Commission on Environmental Quality 2016.

^a One waterbody - Blue Mountain Lake

^b One waterbody - Wright Patman Lake

3.4.2.2 Floodplains

Floodplains are defined as any land area susceptible to being inundated by waters from any source (44 CFR 59.1), and are often associated with surface waters and wetlands. Floodplains are valued for their natural flood and erosion control, enhancement of biological productivity, and socioeconomic benefits and functions. For human communities, however, floodplains can be considered a hazard area because buildings, structures, and properties located in floodplains can be inundated and damaged during floods.

Floodplains that are relatively undisturbed or that have been restored to a nearly natural state provide a wide range of benefits to both human and natural systems. The Federal Interagency Floodplain Management Task Force (1994) groups these potential benefits into three categories—water resources, biological resources, and societal resources—labeled according to the primary recipient of the benefit or its relationship to a larger system. Table 3.4-4 summarizes potential floodplain benefits in the context of water resources.

Table 3.4-4. Potential Floodplain Benefits to Water Resources

Natural Flood and Erosion Control	Water Quality Maintenance	Groundwater Recharge
<ul style="list-style-type: none"> • Flood storage and conveyance • Reduce flood velocities • Reduce flood peaks • Reduce sedimentation 	<ul style="list-style-type: none"> • Filter nutrients and impurities from runoff • Process organic wastes • Moderate temperature fluctuations 	<ul style="list-style-type: none"> • Promote infiltration and aquifer recharge • Reduce frequency and duration of low surface flows

Source: Federal Interagency Management Task Force 1994.

Floodplains in the Study Area

FEMA has mapped approximately 4,228,302 acres of 100-year floodplains in the study area (Table 3.4-5). Due to the proportion of each state in the study area, Oklahoma contains the most mapped floodplains, followed by Arkansas and Texas.

Table 3.4-5. Area of FEMA Mapped 100-year Floodplain in the Study Area by State

State	Area (acres)
Arkansas	823,952
Oklahoma	2,878,073
Texas	526,277
Total	4,228,302
Source: Federal Emergency Management Agency 2017.	

According to the NRCS soils data, there are approximately 4,869,082 acres of flood-prone soils in the study area (Table 3.4-6). Due to the proportion of each state in the study area, Oklahoma contains the most mapped flood-prone soils, followed by Arkansas and Texas.

Table 3.4-6. Area of NRCS Flood-Prone Soils in the Study Area by State

State	Area (acres)
Arkansas	770,830
Oklahoma	3,659,123
Texas	439,129
Total	4,869,082
Source: Natural Resource Conservation Service 2017.	

Existing AEP transmission lines in the study area cross 409 miles of FEMA-mapped 100-year floodplains and 534 miles of NRCS flood-prone soil areas.

3.4.2.3 Wetlands

Wetlands are important features in the landscape that provide numerous beneficial services for people and for fish and wildlife. Some of these services, or functions, include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters, producing aesthetic value, insuring biological productivity, filtering pollutant loads, and maintaining surface water flow during dry periods. Functions are the result of the inherent and unique natural characteristics of wetlands.

Wetland functions can also reflect a measurable value to society. For example, a value can be determined by the revenue generated from the sale of fish that depend on the wetland, by the tourist dollars associated with the wetland, or by public support for protecting fish and wildlife. Although large-scale benefits of functions can be valued, determining the value of an individual wetland is difficult because wetlands differ widely and do not all perform the same functions or perform functions equally well (U.S. Environmental Protection Agency 2002).

Wetland Classification System

The NWI was established by the Service to conduct a nationwide inventory of wetlands to provide information on the distribution and type of wetlands and to aid in conservation efforts. To do this, the NWI developed a wetland classification system (Cowardin et al. 1979) that is now the Federal standard for classifying wetlands (adopted by the Federal Geographic Data Committee).

The Cowardin classification system groups wetlands using system and class descriptors. The term *system* refers to a complex of wetlands and deepwater habitats that share the influence of similar hydrologic, geomorphologic, chemical, or biological factors. The *class* describes the general appearance of the habitat in terms of either the dominant vegetation life form or the substrate type. When more than 30 percent of the substrate is covered by vegetation, a vegetation class is used (e.g., emergent). When less than 30 percent of the substrate is covered by vegetation, a substrate class is used (e.g., unconsolidated bottom). Following is a description of the three wetland systems and the main wetland classes that occur in the study area.

Palustrine

The palustrine system includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. Most inland wetlands fall into the palustrine system. Classes in the palustrine system include the following.

- **Emergent wetlands.** Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.
- **Forested wetlands.** Forested wetlands are characterized by woody vegetation that is 20 feet (6 meters) tall or taller.
- **Scrub-shrub wetlands.** Scrub-shrub wetlands are dominated by woody vegetation less than 20 feet (6 meters) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.
- **Unconsolidated bottom.** Unconsolidated bottom includes all wetlands and deepwater habitats with at least 25 percent cover of particles smaller than stones (less than 2 to 3 inches [6 to 7 centimeters]), and a vegetative cover less than 30 percent.
- **Aquatic bed.** An aquatic bed includes wetlands and deepwater habitats dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years.
- **Unconsolidated shore.** The unconsolidated shore includes all wetland habitats having two characteristics: 1) unconsolidated substrates with less than 75 percent areal cover of stones, boulders, or bedrock and; 2) less than 30 percent areal cover of vegetation. Landforms such as beaches, bars, and flats are included in this class.

Lacustrine

The lacustrine system includes wetlands and deepwater habitats with all of the following characteristics: 1) situated in a topographic depression or a dammed river channel; 2) lacking trees, shrubs, persistent emergents, emergent mosses, or lichens with greater than 30 percent areal coverage; and 3) total area exceeds 20 acres (8 hectares). Similar wetland and deepwater habitats totaling less than 20 acres (8 hectares) are also included in this system when an active wave-formed or bedrock shoreline feature makes up all or part of the boundary or when the depth in the deepest part of the basin exceeds 6.6 feet (2 meters) at low water.

Riverine

The riverine system includes all wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link

between two bodies of standing water. Upland islands or palustrine wetlands may occur in the channel, but they are not part of the Riverine System.

Wetlands in the Study Area

The NWI shows approximately 2,140,302 acres of wetlands and deepwater habitats in the study area (Table 3.4-7). Forested wetlands comprise the majority of wetlands compared to other wetland types in each state in the study area. Existing AEP transmission lines in the study area cross 4,698 individual wetlands and deepwater habitats mapped by NWI.

Table 3.4-7. Wetlands and Deepwater Habitats in the Study Area by State

Wetland Type	Wetland Amount (acres)		
	Arkansas	Oklahoma	Texas
Palustrine emergent	7,964	79,837	18,553
Palustrine scrub-shrub	9,955	44,786	12,150
Palustrine forested	118,616	482,085	152,204
Freshwater pond ^a	22,380	175,526	20,489
Riverine	69,935	304,583	22,527
Lacustrine	77,650	491,007	30,032
Other ^b	-	-	23
Total	306,500	1,577,824	255,978

Source: U.S. Fish and Wildlife Service 2017

^a Includes unconsolidated bottom, aquatic bed, and unconsolidated shore classes of the palustrine system.

^b Includes miscellaneous wetlands in the palustrine system.

Wetland vegetation in the study area varies by wetland type. Table 3.4-8 shows the common vegetation associated with freshwater emergent, scrub-shrub, and forested.

Table 3.4-8. Common Wetland Vegetation in the Study Area by Wetland Type

Wetland Type	Vegetation
Emergent	Smartweed (<i>Polygonum</i> spp.), arrowhead (<i>Sagittaria latifolia</i>), sedge (<i>Carex</i> spp.), bladderwort (<i>Utricularia</i> spp.), arrow arum (<i>Peltandra virginica</i>), lizard's tail (<i>Saururus cernuus</i>), spiderlily (<i>Hymenocallis liriosme</i>), cattail (<i>Typha</i> spp.), bulrush (<i>Scirpus</i> spp.), water primrose (<i>Ludwigia hexapetala</i>), rice cutgrass (<i>Leersia oryzoides</i>).
Scrub-shrub	Buttonbush (<i>Cephalanthus occidentalis</i>), swamp privet (<i>Forestiera acuminata</i>), willow (<i>Salix</i> spp.), younger species of the forested class.
Forested	Bald cypress (<i>Taxodium distichum</i>), black willow (<i>Salix nigra</i>), water oak (<i>Quercus nigra</i>), willow oak (<i>Quercus phellos</i>), overcup oak (<i>Quercus lyrata</i>), water hickory (<i>Carya aquatic</i>), green ash (<i>Fraxinus pennsylvanica</i>), pecan (<i>Carya illinoensis</i>), possumhaw holly (<i>Ilex decidua</i>), blue beech (<i>Carpinus caroliniana</i>), planertree (<i>Planera aquatic</i>), nuttall oak (<i>Quercus texana</i>), bitternut hickory (<i>Carya tomentosa</i>), Sycamores (<i>Plantanus</i> spp.), river birch (<i>Betula nigra</i>), red maple (<i>Acer rubrum</i>), silver maple (<i>Acer saccharinum</i>).

Sources: Texas Parks and Wildlife Department 2003; Oklahoma Conservation Commission 2000.

3.4.3 Environmental Consequences

This section describes the potential impacts on water resources in the study area for Alternative B, the Proposed HCP; Section 3.1.2 describes the potential impacts under Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area. Surface water, floodplains, and wetlands are distinct resources, but they do not function as separate and isolated components of the watershed, but rather as a single, integrated natural system; disruption of any part of these resources may have an effect on the functioning of the entire system (Federal Emergency Management Agency 2007).

3.4.3.1 Surface Waters

The surface waters impacts discussion focuses on Covered Activity impact mechanisms that would occur outside of surface waters because ABB does not occur in surface waters (i.e., rivers, streams, creeks, ponds, lakes), and by definition, Covered Activities would occur only in areas with positive ABB survey results or where ABB presence is assumed (i.e., where take would occur and the area to which the ITP applies). Should AEP require the placement of permanent fill or structure directly within a surface water (e.g., transmission line tower footing) and outside the areas where the ITP would apply, AEP would need to obtain all necessary Federal permits (e.g., CWA Section 404, 401 Water Quality Certification), that require separate NEPA compliance by the U.S. Army Corps of Engineers (Corps).

Potential surface water impacts are discussed qualitatively and at a programmatic level due to the geographic breadth of the study area and because the precise locations and timing of Covered Activities are unknown. The number of surface waters crossed by existing electric transmission and distribution lines (electrical lines) was generated through a GIS analysis (Section 3.4.3.1, *Surface Waters*). Whether a particular surface water crossed by an existing electrical line would be affected by operations and maintenance activities over the permit term cannot be determined. Any activity that would occur near a surface water would have a potential to affect the surface water via indirect effects. Impact mechanisms or activities associated with Covered Activities that can affect surface waters include ground disturbance and mobilization of sediments, accidental petrochemical spills, vegetation management, and alterations of surface topography and overland runoff. The extent and severity of the impacts described would depend on the site-specific conditions and the Covered Activity.

Impacts from Alternative B: Proposed HCP

Ground Disturbance and Sedimentation

All Covered Activities would cause ground disturbance, although construction of new aboveground electrical lines and facilities would make up approximately 90 percent of all ground disturbance over the permit term when compared to ground disturbance estimated from operations and maintenance of existing facilities (Chapter 2, Table 2-1). New aboveground electrical lines and facilities would also cause the greatest level of ground disturbance due to clearing and altering mostly previously undisturbed vegetation and land. Any ground disturbance activity can alter erodibility and potential for runoff.

1 Use of construction and maintenance vehicles and equipment can loosen and expose bare soils and
2 increase the potential for sediment particles to be mobilized and carried in overland runoff, with
3 potential to reach adjacent or nearby surface waters. Sediment deposition into surface waters can
4 affect water quality by increasing turbidity, which can directly affect aquatic species and habitats.
5 Turbidity can decrease light penetration and increase pollutant and nutrient levels (e.g., nitrogen
6 and phosphorous) which can alter water quality conditions. For example, excess nutrients in a
7 surface water may enhance the growth of algae and produce algal blooms, which can affect the
8 availability of oxygen in water. These potential impacts could be exacerbated if the surface water is
9 already designated as an impaired water.

10 While sedimentation into surface water would likely be a short-term occurrence during ground
11 disturbance, the settling of sediments in a surface water may have long-term effects. For example,
12 significant sediment deposition into a stream may physically alter (e.g., raise) the stream bed, thus
13 affecting the stream's flow and erosional patterns. The risk of sedimentation can be reduced by
14 avoiding surface waters as much as possible and by application of BMPs for erosion, which are
15 included as an ABB AMM in the HCP. These BMPs would control the volume, rate, and sediment of
16 surface runoff, minimizing and potentially avoiding sediment-laden runoff reaching surface waters;
17 erosion control measures may include silt fencing, hay bales, water bars, and other efforts to prevent
18 washing away of disturbed soils, formation of gullies, and other erosion impacts. Additional AMMs
19 would also reduce potential erodibility and sedimentation impacts, including limiting disturbance
20 from mechanical vegetation maintenance, and limiting the use of vehicles and construction
21 equipment to minimize soils disturbance.

22 The HCP mitigation plan also includes post-construction restoration for vegetation cover impacts,
23 which includes revegetation and relief of compacted soils; these measures would also reduce
24 potential erosion and sedimentation. For activities that disturb more than 1 acre of land, AEP would
25 prepare a stormwater pollution prevention plan (SWPPP) and obtain a National Pollutant Discharge
26 Elimination System (NPDES) permit (CWA Section 402). The SWPPP will also contain site specific
27 measures to avoid and minimize impacts on surface waters.

28 **Accidental Petro-Chemical Spills**

29 The use of construction and maintenance equipment for Covered Activities could result in accidental
30 spills or leaks of petro-chemicals (e.g., gasoline, hydraulic fluids) onto the ground surface, which
31 could reach surface waters if not contained and cleaned up. Although the risk of a major spill and
32 contamination of surface waters is low, accidental spills may degrade water quality, kill or injure
33 aquatic organisms, or limit the beneficial use of waters (e.g., drinking, recreation). These potential
34 impacts could be exacerbated if the surface water is already designated as an impaired water. The
35 risk of an accidental petro-chemical spill affecting surface waters can be reduced by avoiding surface
36 waters as much as possible and by application of BMPs to ensure a timely cleanup. One of the HCP
37 AMMs (Increase Safety During Operation Fluid Use and Storage) would reduce this potential impact
38 by ensuring that all petro-chemicals are stored and used properly. In addition, for activities that
39 disturb more than 1 acre of land, an SWPPP would be required to obtain an NPDES permit (CWA
40 Section 402). The SWPPP would contain site specific measures to avoid and minimize accidental
41 petro-chemical spill impacts on surface waters.

Vegetation Management

The operations and maintenance of existing facilities would include vegetation control in the form of mowing, and periodic removal of trees or tree limbs to ensure safe operations. If these activities occur in riparian areas along streams, the removal of vegetation can reduce the riparian area's natural ability to protect the stream against non-point source pollutants and could contribute to increased stream temperatures and lower dissolved oxygen because of reduced overwater shade. In addition, vegetation removal around surface waters can reduce bank stability and increase sedimentation.

Alteration of Surface Topography and Overland Runoff

Covered Activities that require grading, excavation, and placement of fill material could cause long-term changes to surface topography and alterations of the natural flow direction and volumes of overland runoff. This potential impact would most likely occur during construction of new aboveground electrical lines and facilities, which make up approximately 90 percent of all ground disturbance over the permit term (Chapter 2, Table 2-1). Operations and maintenance of existing facilities activities would occur along existing transmission lines, and any change to surface topography and overland runoff has already occurred and stabilized from construction of those transmission lines, although these activities could result in small topographical changes. Changes to surface topography and compaction of soils can redirect and change velocities of overland runoff, which can affect receiving surface waters. In addition, development of new support facilities (e.g., substation) may require the placement of impervious surfaces, which could increase stormwater runoff due to the limited porosity of the impervious surface. Any increase in stormwater runoff to a nearby stream could increase the amplitude of stream flows, increase bank instability, and disperse pollutants. These changes and potential impacts would likely persist during operations of the facilities.

During construction activities the alteration of surface topography and overland runoff effects on surface waters can be reduced by application of BMPs for controlling runoff, which are included as an AMM in the HCP. These BMPs would control the volume and rate of surface runoff, minimizing and potentially avoiding differing runoff volumes reaching surface waters; control measures may include silt fencing, hay bales, water bars, and other efforts. Additional AMMs would also reduce potential topography alterations and runoff volumes, including 1) limiting disturbance from mechanical vegetation maintenance, and 2) limiting the use of vehicles and construction equipment to minimize soil disturbance and compaction. The HCP mitigation plan also includes post-construction restoration for vegetation cover impacts, which includes revegetation and relief of compacted soils that could minimize alterations to topography and increased runoff volumes, reducing potential long-term impacts on surface waters.

3.4.3.2 Floodplains

Potential floodplain impacts are discussed qualitatively and at a programmatic level due to the geographic breadth of the study area and because the precise locations and timing of future Covered Activities are unknown. A GIS analysis generated the miles of floodplains crossed by existing electrical lines (Section 3.4.1.2, *Floodplains*); however, when or if a particular floodplain crossed by an existing electrical line would be affected by operations and maintenance activities over the permit term cannot be determined, although any activity that would occur in a floodplain would have greater potential to be affected. Overhead transmission lines will have no effect on floodplains

provided the poles or towers are constructed outside the floodplain and no floodplain vegetation is cleared. While it is anticipated that floodplains would be largely avoided because of the risk of flood damage to AEP infrastructure and regulatory requirements for constructing in floodplains (e.g., transmission lines would be built to span streams, rivers, and narrow floodplains), floodplain impacts could still occur, potentially resulting in the alteration of floodplain areas and floodplain functions (Table 3.4-4), including floodwater storage capacity, conveyance, and retention. The extent and severity of the impacts described would depend on the site-specific conditions and the Covered Activity.

Impacts from Alternative B: Proposed HCP

Decreased Floodwater Storage, Conveyance, and Retention

Covered Activities that require vegetation clearing, excavation, and placement of fill material or structures in floodplains could affect floodplain functions. Potential floodplain impacts would most likely occur during construction of new aboveground electrical lines and facilities, which make up approximately 90 percent of all ground disturbance over the permit term (Chapter 2, Table 2-1). Placing fill material or structures in a floodplain can interfere with the passage, storage, and retention of floodwaters. Alteration of ground elevations in a floodplain by placement of fill material or structures causes a direct loss of flood storage capacity equivalent to the volume of fill or structure below the flood elevation. This reduced flood storage capacity and displacement of floodwaters can result in greater volumes of floodwater downstream and subsequent increases in floodwater levels. Conversely, constriction of flood flow paths from loss of floodplain storage capacity may increase floodwater elevation upstream of the constriction, resulting in upstream flooding from backup of floodwaters. These alterations and redirections of flood flows to other parts of the channel or floodplain can also lead to channel erosion and alteration of channel alignment. The extent of these impacts would vary based on the extent of the floodplain modification. For example, if a transmission line pole or tower is placed in a floodplain without changing the floodplain elevation, any flood displacement impact would likely consist of small localized increases in flood elevation and duration. However, transmission towers or poles may trap debris during flood flows, which could increase the potential to increase flood elevation and duration.

Covered Activities that would clear floodplain vegetation (but would not change floodplain elevations) could alter a floodplain's capacity to slow down, retain, and absorb floodwaters. Clearing floodplain vegetation during construction of new overhead lines and support facilities, or maintaining low vegetative cover during operations and maintenance activities (e.g., in AEP rights-of-way) in floodplain can lead to increased downstream flood flows, sedimentation, channel erosion, and flooding. The extent of such impacts would vary based on the amount of vegetation removed and whether removal would be temporary (e.g., construction staging) or permanent (e.g., convert forest to a permanent shrub or herbaceous vegetation type in a new right-of-way). Several HCP AMMs would reduce potential vegetation removal and disturbance that could reduce potential floodplain water retention impacts, including 1) limiting disturbance from mechanical vegetation maintenance, and 2) limiting the use of vehicles and construction equipment to minimize soil disturbance and compaction. The HCP mitigation plan also includes post-construction restoration for vegetation cover impacts that includes revegetation and relief of compacted soils which could minimize disturbed vegetation and ground disturbance, reducing potential long-term impacts on floodplain function.

3.4.3.3 Wetlands

Potential wetland impacts are discussed qualitatively and at a programmatic level due to the geographic breadth of the study area and because the precise locations and timing of future Covered Activities are unknown. The number of wetlands crossed by existing electrical lines was generated through a GIS analysis (Section 3.4.3.3, *Wetlands*). However, when or if a particular wetland crossed by an existing electrical line would be affected by operations and maintenance activities over the permit term cannot be determined, although any activity that would occur in or near a wetland would have greater potential to be affected. While there is potential for direct wetland impacts from Covered Activities, AEP is expected to avoid almost all wetlands in order to avoid the need to seek a Federal wetland permit (e.g., under the CWA). Furthermore, permanently inundated wetlands or wetlands that are inundated or saturated for a significant period of the year are unsuitable habitat for ABB so it is unlikely that Covered Activities would occur in many wetlands (i.e., by definition, the Covered Activities are limited to areas occupied by ABB and to where the ITP applies). However, should an AEP activity require the placement of permanent fill or structure within a wetland that is not considered ABB habitat, AEP would be required to obtain all necessary federal permits (e.g., CWA Section 404, 401 Water Quality Certification), which require compensatory mitigation by AEP to replace lost wetland functions. Impact mechanisms or activities associated with Covered Activities that can affect wetlands include wetland loss and degradation of wetland functions, including habitat, water quality, and stormwater and floodwater storage. The extent and severity of the impacts described would depend on the site-specific conditions and the Covered Activity.

Impacts from Alternative B: Proposed HCP

Wetland Loss and Degradation—Habitat

Covered Activities that occur in wetlands could temporarily or permanently affect wetland vegetation and habitat functions, including operating construction and maintenance vehicles in wetlands, vegetation maintenance of existing facilities, temporary staging that may be required in wetlands, clearing of wetland vegetation (e.g., new right-of-way), or placement of permanent fill material during construction activities (note that habitat functions would be entirely lost if a wetland is completely filled). If a wetland is partially filled or vegetation fragmented, or if wetland vegetation is trimmed or cleared, vegetation communities and habitat will be permanently altered and degraded. For example, if a new right-of-way is cleared for a new transmission line that crosses a forested wetland, the forested wetland vegetation would need to be cleared and would be converted to scrub-shrub or herbaceous wetland vegetation, which is a permanent, long-term change in habitat that would affect wildlife.

Wetland habitat and vegetation communities could also be affected if Covered Activities alter topography around a wetland, potentially affecting the volume or amount of overland runoff that may support wetland hydrology. This hydrology alteration could affect vegetation and wetland habitat by changing plant species' composition (i.e., from wetland to more upland plants or vice versa, depending the hydrology alteration). Changes in vegetation community composition may also include the increase or establishment of invasive plant species, which can out-compete native wetland vegetation and result in an altered vegetation structure. Several AMMs would reduce potential vegetation removal and disturbance, including 1) limiting disturbance from mechanical vegetation maintenance, and 2) limiting the use of vehicles and construction equipment to minimize soils disturbance and compaction. The HCP mitigation plan also includes post-construction

restoration for vegetation cover impacts that includes revegetation and relief of compacted soils which could minimize disturbed vegetation and ground disturbance.

Wetland Loss and Degradation—Water Quality

Covered Activities that occur in or around wetlands could impact wetland water quality functions. Permanent placement of fill material in a wetland would result in the permanent loss of the wetland's ability to improve water quality; on a watershed level, any permanent wetland loss could reduce the capacity of regional wetlands to filter pollutants and improve water quality. Ground disturbance in or near wetlands could also result in degraded water quality of the wetland itself. The primary concerns are impacts associated with sedimentation and petro-chemical products (Section 3.4.3.1, *Surface Waters*). Soil disturbance and exposure to surface runoff during construction could increase sediment in nearby wetlands, potentially increasing surface water turbidity, smothering wetland vegetation, reducing water oxygen levels, and reducing wetland water storage capacity. Although the effects of sedimentation associated with Covered Activities may not be widespread, they could result in long-term impacts on local wetland communities. While many wetlands act to filter out sediment and contaminants, any substantial increase in sediment or contaminant loading could exceed the capacity of a wetland to perform its normal water quality functions. The AMMs would limit the release of sediments (Section 3.4.3.1, *Surface Waters*) and would minimize potential impacts on wetland water quality functions.

Wetland Loss and Degradation—Stormwater and Floodwater Storage

Covered Activities that occur in wetlands could affect wetland stormwater and floodwater storage functions. Fill material placed in a wetland during construction activities would result in the permanent loss of the wetland's ability to impede and retain stormwater and floodwater; on a watershed level, any permanent wetland loss could reduce the capacity of regional wetlands to impede and retain these flows. Any alteration of wetland vegetation (see *Wetland Loss and Degradation—Habitat*) could also permanently reduce a wetland's ability to retain overland runoff. For example, clearing and trimming of wetland vegetation for a transmission line right-of-way could permanently change vegetation communities from one type to another (e.g., forested to scrub shrub), permanently reducing the functional capacity of wetlands to impede and retain stormwater and floodwater. Densely vegetated wetlands may be more sensitive to this impact since these wetlands have a greater ability to slow down and retain stormwater and floodwater. Several HCP AMMs would reduce potential vegetation removal and disturbance, which would reduce potential impacts on stormwater and floodwater storage, including 1) limiting disturbance from mechanical vegetation maintenance, and 2) limiting the use of vehicles and construction equipment to minimize soils disturbance and compaction. The HCP mitigation plan also includes post-construction restoration for vegetation cover impacts that includes revegetation and relief of compacted soils which could minimize wetland vegetation disturbance and wetland capacity to store stormwater and floodwater.

3.5 Soils

This section describes soil resources in the study area .

3.5.1 Approach and Methodology

The NRCS Soil Survey Geographic database (Natural Resources Conservation Service 2017a) is used to characterize the existing soil conditions, including the dominant soil types, in the study area.

Affected Environment

Soils are the result of complex interactions between geologic parent material, climate, topography, organisms, and time. Soils are classified by the degree of development into distinct layers, or horizons, and their prevailing physical and chemical properties. Similar soil types are grouped into soil *orders* based on defining characteristics that give the soil its unique properties, such as organic matter and clay content, amount of mineral weathering, water and temperature regimes, depth, drainage, slope, particle size, and base saturation.

Soil resources provide the foundation for vegetation and biological communities. Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. The kind and abundance of wildlife depend largely on the amount and distribution of food, water, and cover. Soil orders in the study area include alfisols, entisols, inceptisols, mollisols, ultisols, and vertisols (Natural Resources Conservation Service 2017a). Alfisols, mollisols, and ultisols comprise the majority of the study area (see Figure 3.5-4).

Alfisols are in semiarid to moist areas. These soils result from weathering processes that leach clay minerals and other constituents out of the surface layer and into the subsoil, where they can hold and supply moisture and nutrients to plants. They formed primarily under forest or mixed vegetative cover and are productive for most crops (Natural Resources Conservation Service 2017b).

Mollisols are soils that have a dark colored surface horizon relatively high in content of organic matter. These soils are base rich throughout and therefore are quite fertile. Mollisols characteristically form under grass in climates that have a moderate to pronounced seasonal moisture deficit (Natural Resources Conservation Service 2017b).

Ultisols are soils in humid areas. They form from fairly intense weathering and leaching processes that result in a clay-enriched subsoil dominated by minerals, such as quartz, kaolinite, and iron oxides. Ultisols are typically acid soils in which most nutrients are concentrated in the upper few inches. They have a moderately low capacity to retain additions of lime and fertilizer (Natural Resources Conservation Service 2017b).

1 **Figure 3.5-1. Dominant Soil Orders in the Study Area**2
3 Source: Natural Resources Conservation Service 2017a

3.5.2 Environmental Consequences

This section describes the potential impacts on soils for Alternative B, the Proposed HCP. Due to the geographic breadth of the study area, and because the precise locations and timing of future Covered Activities are unknown, potential impacts are discussed qualitatively at a programmatic level. Section 3.1, *Introduction*, describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area.

Covered Activities can affect soils by land disturbance, soil erosion, and storm water runoff. Impacts in and adjacent to a project area would be short and long term and would vary in intensity, depending on the type of activity (e.g., emergency repair or installing new lines and support facilities). Short-term effects would be temporary in nature and, following construction, would be reclaimed and revegetated in ABB habitat. Long-term impacts would occur in areas where structures, surface facilities, or long-term access roads would be located.

3.5.2.1 Land Disturbance

Land disturbance activities include site clearance, grading, excavation, and soil stockpiling. Soil disturbance may 1) loosen soils making them more susceptible to wind and water erosion, 2) compact soils, reducing their water infiltration capacity and increasing runoff, or 3) displace soils, altering surface runoff patterns.

As part of mitigating effects of Covered Activities, compacted soil in ABB-occupied habitat would be restored by ripping (mechanically breaking up) compacted soil in temporary work sites, laydown areas, and other heavily used or traveled areas to a depth of 24 inches (or to rock if present at less than 24 inches) to relieve soil compaction and facilitate revegetation to restore soil conditions suitable for ABB use. This mitigation would not be required for small project areas (such as maintenance work on a power pole) where the use of tractors and ripping equipment would create a larger impact area.

3.5.2.2 Soil Erosion

Soil erosion by water can remove productive soil and degrade water quality by increasing turbidity and sedimentation in surface waters (Section 3.4, *Water Resources*). Soil erosion by wind can also remove productive soil, especially when removal of vegetation exposes the soil drying conditions. In turn, windblown soil can degrade air quality and visibility. BMPs to minimize erosion include minimizing the disturbed footprint, dust control, and proper stormwater management.

One of the AMMs identified in the HCP to avoid or minimize effects on the ABB is to reduce erosion by implementing stormwater BMPs. American Electric Power would ensure construction activities conform to state-approved, site-specific stormwater management plans using BMPs to control the volume, rate, and water quality of post-construction stormwater runoff. These practices may include erosion control measures such as silt fencing, hay bales, water bars, and other efforts to prevent washing away of topsoil, formation of gullies, or other soil erosion impacts to minimize impacts on the habitat.

As part of mitigating effects on ABB habitat, AEP would revegetate areas where Covered Activities temporarily or permanently change ABB habitat. Vegetation removed or permanently damaged by Covered Activities would be re-established with native species suitable for ABB, and may include species similar to that of the surrounding area (typically warm season grasses) or of the same

vegetation type that existed prior to vegetation removal. If ground disturbance ends during the winter when plants are dormant, bare soil would be temporarily stabilized, if necessary, to prevent erosion by broadcasting cool season plant seeds (e.g., annual rye grass or wheat seed) and, where necessary, using clean, weed-free wheat straw as mulch to protect seed and increase soil moisture. These areas would be re-established at the beginning of the next growing season (preferably prior to the start of the ABB active season in mid to late May).

For temporary vegetation impacts, ABB habitat would be re-established with low-growing vegetation that existed prior to disturbance (mixed grass pasture, native grass and scrub/shrub, and native grass pasture). Vegetation would be re-established to the original density (based on visual comparison of before/after photographs and comparison to adjacent undisturbed areas) within 5 years of initial disturbance consistent with pre-disturbance conditions. For permanent vegetation cover change impacts where pre-disturbance vegetation type cannot be restored within 5 years (e.g., forests), vegetation would be restored to a condition suitable for ABB use within 5 years of initial disturbance. This mitigation would help stabilize soil and prevent erosion.

3.5.2.3 Stormwater Runoff

Ground disturbance activities can alter surface drainage patterns, concentrate surface flows, increase runoff quantities, and increase runoff velocities. Increased and concentrated surface flows promote soil erosion. The AMMs and mitigation noted above would minimize soil impacts from stormwater runoff.

3.6 Cultural Resources

This section describes cultural resources conditions in the study area. Because the exact locations of covered activities is not known at this time, this section provides general knowledge of cultural resources in the study area and further analysis and consultation will be required to meet NHPA compliance requirements once the footprint of the covered activities is determined, as described more thoroughly in Section 3.6.1, *Approach and Methodology*. Cultural resources are past and present expressions of human culture and history in the physical environment. They represent physical locations of human activity, occupation, or use and can refer to historical or architectural objects, sites, structures, or places with potential public and scientific value, including locations of traditional cultural, ethnic, or religious significance to a specific social or cultural group.

3.6.1 Approach and Methodology

Compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, is required by law for all Federal undertakings. This includes issuance of Section 10(a)(1)(B) incidental take permits for activities covered in an HCP. When coverage by the incidental take permit is based on pre-project surveys confirming activities within occupied ABB habitat, and no other federal agency is coordinating Section 106 compliance, AEP will coordinate with the Service and conduct pre-project review to ensure compliance with appropriate state agencies' protocols and regulations (i.e., state historic preservation office and/or state archaeological survey). Pre-project reviews, required cultural resources studies, and consultations will be led by an archaeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards as set forth in 36 CFR 61.

Under this approach, AEP will conduct the appropriate level of pre-project studies and coordinate with the appropriate federal agency, State Historic Preservation Officer or as required to ensure compliance with Section 106. The Service will retain consultation responsibilities with applicable Tribes. Findings from AEP's pre-project review and findings from cultural resources field studies for those projects that require them, will be detailed in a report and submitted to the Service. Reports will be prepared according to state-specific guidelines. The Service will then prepare project notification letters and disseminate the cultural resources reports to appropriate agencies and tribes. This approach will facilitate the Service in fulfilling the requirements of Section 106 of the NHPA, 16 U.S.C. § 470f, and its implementing regulations at 36 C.F.R. § 800. Because the exact location and timing of the Covered Activities in the study area are unknown, the cultural resources in this EIS are examined at a programmatic, general level. The analysis of potential impacts on cultural resources is based on review of existing literature and GIS information gathered from the NRHP, updated through July of 2015 (National Park Service 2015). These GIS data were overlain with the study area to quantify and describe the general location of cultural resources by state in the area. Potential effects are quantified where possible. In cases where quantitative data are not available because the exact locations of Covered Activities are not known, qualitative assessments are used to describe impacts. Once the footprint of the Covered Activities is determined, the Service's Regional Historic Preservation Officer would work with AEP and SHPO to identify a more specific APE and to assess the potential for ground disturbing or other land alteration activities to affect historic properties within the APE. Where a historic property may be adversely affected, the Service, in collaboration with the applicant, SHPO, Tribes, and other individuals with an interest in the affected property, would work to identify site-specific avoidance and minimization that resolve or reduce the adverse impacts.

The study area for cultural resources is the APE. Under Section 106 of the NHPA, the APE is defined as "those areas in which impacts are planned or are likely to occur. Specifically, the APE is defined as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. Additionally, the APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16[d])." The APE for this document covers the Plan Area; however, Covered Activities are limited to the operation and maintenance of existing lines and facilities, the corridors where new transmission lines and facilities would be built, and the location of mitigation sites. Once the footprint of the Covered Activities is known, the Service's Regional Historic Preservation Officer would work with AEP and the SHPO to identify a more specific APE and to assess potential adverse effects on historic properties.

3.6.2 Affected Environment

3.6.2.1 Cultural Resources Setting

The following cultural context was summarized from entries in the *Handbook of Texas* (Texas State Historical Association 2010), *Texas Beyond History* (University of Texas at Austin 2016), *The Encyclopedia of Oklahoma History and Culture* (Oklahoma Historical Society 2017), and *The Encyclopedia of Arkansas History & Culture* (Central Arkansas Library System 2017). Although it comprises three states, it is important to note that study area maintains a degree of general consistency regarding its prehistory and history.

1 The recorded prehistory of the study area extends back approximately 13,500 years ago and is
2 generally divided into four periods: Paleoindian, Archaic, Late Prehistoric, and Historic. The
3 Paleoindian period extends from the earliest known inhabitants of the region (13,500 years before
4 present or 11,500 Before Common Era [BCE]) and can be linked to the Clovis Complex. Both Clovis
5 and Folsom fluted points associated with bison and other large game kill sites and campsites can be
6 found in the region. Paleoindian peoples are commonly characterized as small groups of highly
7 mobile, nomadic hunters and foragers. Tool assemblages diversified around 8000 BCE during the
8 warming period at the end of the Pleistocene, indicating a variety of hunter and gatherer type
9 subsistence strategies. The Archaic period begins around 6000 BCE and is denoted by changes in
10 tool styles, the introduction of grinding implements, and population growth. This reflects an
11 increase in the utilization of plant and animal resources as well as the general broadening of trade
12 and relationships between various peoples. Evidence suggests that groups were beginning to form
13 settlements during the latter part of the Archaic period, around 500 BCE. Around the same time, the
14 Woodland Period in Arkansas, which is characterized by the manufacture and use of pottery, began.
15 The Late Prehistoric period begins at 700 Common Era (CE); during this time the bow and arrow are
16 introduced and pottery in Texas is also present. Though hunting and gathering does continue for
17 some groups during the Late Prehistoric period, there is evidence of increased settlement and
18 horticultural practices. Widespread and long-distance trade is also reflected in the archaeological
19 record during this period as evidenced by the distribution of artifacts made of materials that cannot
20 be sourced to the region, such as obsidian. The end of the Prehistoric era and the beginning of the
21 Historic era is generally marked when European contact occurred in the region. European explorers,
22 mainly Spanish and French, began traversing the region around 1600 CE for trapping and trade.
23 During this time, the Spanish mission system began in Texas and sought to incorporate indigenous
24 peoples into the Spanish empire, culture, and religion, which vastly affected native cultures and
25 traditions. By the late 18th century, glass, brass, and iron materials largely replaced stone tools and
26 traditional Native American cultures and practices were inexorably altered. Beginning in the late
27 19th century, the United States Federal government forcibly relocated many tribal groups from the
28 eastern United States to today's Oklahoma.

29 In addition to the changes in Native American culture that took place during the Historic period, the
30 region experienced many changes on an international scale as well. The signing of the Louisiana
31 Purchase in 1803 made Arkansas, Oklahoma, and northern portions of Texas part of the United
32 States. After the Mexican War of Independence from Spain from 1810 to 1812, the majority of
33 present-day Texas formed part of the northern border of Mexico. Mexico encouraged colonization in
34 the Texas region to deter encroachment from the United States. The economy was predominantly
35 based on ranching and subsistence agriculture during this time. By the end of the Mexican period,
36 many cultural changes had occurred in the Texas region that gave it unique Anglo-American
37 characteristics including the formation of a republican form of government and the introduction of
38 Christian communions. The Texas Revolution began in 1835 and ended in 1836, though both
39 Mexicans and Texans still claimed the area and skirmishes continued. Texas became an independent
40 republic in 1836, but was annexed by the United States in 1845. Arkansas became a state in 1836.
41 The United States Civil War had a large impact on the economy and population of Texas and
42 Arkansas, as the states voted for secession and joined the Confederacy in 1861. Tribes in the Indian
43 Territory of what is now Oklahoma were also compelled to fight for the Confederacy. Economic
44 recovery began in the late 1860s and early 1870s in Texas and Arkansas with the initiation of the
45 great cattle drives and the growing popularity of sheep ranching in the 1870s. Many industrial
46 facilities were established in the late 19th and early 20th centuries and employment in
47 manufacturing swelled. Oklahoma officially became a state in 1907, but political and cultural strife

between Native Americans and settlers with ranching and industrial interests continued. Texas became a major military training center during World War II and has increasingly transformed from a rural and agricultural state to an urban and industrialized capital. World War II also spurred Arkansas and Oklahoma to diversify a mainly agriculturally based economy to one including more industry and energy development.

3.6.2.2 National Register of Historic Places

There are more than 1,200 NRHP-listed properties in the study area, making it impractical to identify all NRHP properties individually, either on maps or in tabular format. Accordingly, this section provides a broad summary of the properties, categorized by state and type, in Table 3.6-1. These properties include buildings, such as historic houses; districts, such as historic parks; objects, such as monuments and statues; sites, such as archaeological sites and cemeteries; and structures, such as historic bridges and dams. Oklahoma has the highest number of historic properties within the study area (totaling 908), followed by Arkansas (327), and Texas (25).

Table 3.6-1. National Register of Historic Places-Listed Properties by State in the Study Area

State	Buildings	Districts	Objects	Sites	Structures	Total
Arkansas	217	37	9	13	51	327
Oklahoma	667	146	2	59	34	908
Texas	21	1	0	0	3	25
Total	905	184	11	72	88	1,260

National Park Service 2015

3.6.2.3 Native American Consultation

During scoping for the EIS, the Service sent email notifications to 38 federally recognized Native American tribal representatives located throughout the study area (see Appendix D, Scoping Report, for a list of the tribes). Notifications were also sent to the Arkansas Natural Heritage Commission, the Bureau of Indian Affairs—Eastern Oklahoma and Southern Plains Regions, and the Fort Smith Historic Site. Tribal representatives were invited to submit comments during the scoping period, and were provided a copy of the Notice of Intent, the project-related News Release, and the public notices. The Service has received a response from the Choctaw Nation of Oklahoma, requesting a copy of the EIS (See Appendix D, Scoping Report).

3.6.3 Environmental Consequences

This section describes the potential impacts from the alternatives on the cultural resources in the study area or APE. Potential effects on historic properties are reviewed under the criteria of adverse effect at 36 CFR 800.5 (a)(1). An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse impacts may include visual effects that diminish a property's integrity, historical significance, or eligibility for listing on the NRHP. Adverse effects may also include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative. The cultural resources in this EIS are examined at a programmatic, general level, because the exact location and timing of the Covered Activities in the study area are unknown. Section 3.1.2 describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area.

3.6.3.1 Impacts from Alternative B: Proposed HCP

Disturbance or Alteration of Known Historic Properties

Certain Covered Activities under Alternative B would involve ground-disturbing activities that may adversely affect known historic properties. Potential ground-disturbing Covered Activities include reconductoring, pole replacement and repair, emergency response and outage repair, and construction of lines and facilities, including above-ground electric lines and support facilities (i.e., substations and switching stations), though most of these activities would take place in existing rights-of-way that have already been subject to ground disturbance. Along with the surface disturbance of these Covered Activities, there is the risk of additional exposure to vandalism and illegal excavation of known cultural resources that were not previously exposed. In addition to the Covered Activities, natural forces such as erosion and flooding may disturb cultural resources. Adverse effects on historic properties may include the following.

- Physical destruction of or damage to all or part of a historic property.
- Alteration of a historic property, including the restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.
- Removal of a historic property from its historic location.
- Change of the character of the historic property's use of or physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significantly historic features.

The potential for these impacts is reduced by the fact that most of the Covered Activities would take place in existing rights-of-way that have already been subject to ground disturbance. Further, conservation strategies proposed for the ABB HCP would minimize the effects of ground-disturbing activities on cultural resources. For example, limiting the off-road use of motor vehicles, machinery, or heavy equipment in occupied ABB habitat would reduce erosion and sedimentation processes that often expose cultural resources, which are then subject to looting by the public.

Disturbance of Unknown or Buried Cultural Resources

Execution of Covered Activities under Alternative B would result in ground-disturbance that has the potential to adversely impact cultural resources if those resources are buried and inadvertently disturbed. Even shallow ground disturbance may disturb unknown cultural resources. However, as with the disturbance of known cultural resources, conservation strategies proposed for the ABB HCP such as limiting the off-road use of motor vehicles, machinery, or heavy equipment would minimize the effects of ground-disturbing activities on cultural resources.

Visual Impacts on the Cultural or Historic Setting

The construction of electrical infrastructure could result in visual impacts on cultural or historic resources. The extent of the impacts would depend upon the exact siting and layout of any new electric lines and support facilities relative to visually sensitive cultural or historic resources.

3.7 Visual Resources

This section describes the issues, rationale, and regulatory framework for analysis of the affected environment and analysis of potential impacts based on the implementation of the HCP and Covered Activities, including potential construction, operation, and maintenance of AEP facilities. Visual resources are defined as the visible features of the landscape.

3.7.1 Approach and Methodology

The analysis of visual resources in the human environment (people, land, and views) is based on the assumptions that degradation of public views and scenery would affect how the public engages or interacts with a visual resource. Landscapes that are scenic, historic, recreational, cultural, archaeological, and/or possess significant natural qualities heighten viewers' concern for changes to scenic quality and define the baseline human environment for visual resources.

The scenic landscape is assessed by its visual quality or attractiveness and by the arrangement and spatial organization of natural and human-made elements. Documentation of scenic quality includes rating the variety, color, and uniqueness of landforms, vegetation, water, and structures, and the influence of the built environment on the natural landscape.

Views from important observation points (e.g., scenic overlooks, community gateways, historic markers), linear features (e.g., roads, trails, rivers) or view areas (e.g., parks, recreation, designated protected landscapes) are the basis for impact studies. View distance, vegetation, topographic slopes, and characteristic landscape (particularly the presence or absence of existing utility facilities) play important roles in the assessment of change caused by potential activities on landscape scenery.

Based on the locations of existing AEP facilities and the potential for new activities and ROWs, it is estimated that the study area would be comparable to the Plan Area, except in areas where the viewsheds of potential Covered Activities would extend beyond the boundaries of the Plan Area.

Distance Factors

Both the context and intensity of visual impacts are substantially influenced by the distance between casual observers and the perceived change in their view of the characteristic landscape. Casual observers may be situated at residences, businesses, recreation areas, roads, trails, rivers, meeting places, and historic or cultural sites. While the exact locations of future construction are unknown in this programmatic EIS, distance and visibility factors for potential activities are assessed based on viewers' recognition of AEP's standard utility structures, conductors, ancillary facilities, and cleared ROWs. Distances are categorized into four zones: 1) immediate foreground (0 to 0.5 mile); 2) foreground (0.5 to 2.5 miles); 3) middleground (2.5 to 5.0 miles); and 4) background (greater than 5 miles). These distances influence viewer concern and the intensity of impacts on people. The relative difference in the extent (10 to 15 miles versus 2 to 3 miles) is based on visibility of cleared vegetation in ROWs in forested landscapes compared with the visibility of facilities in locations with no tree cover or where trees are cleared.

3.7.2 Affected Environment

The Plan Area includes the plains, mountains, valleys, and developed landscapes of portions of Arkansas, Oklahoma, and Texas. The study area for visual resources comprises the landforms, vegetation, water, and built environment of the Central Lowlands, Coastal Plain, Ouachita, and Ozark Plateaus Physiographic Provinces (Fenneman 1931), as identified in western Arkansas (10 counties), central and eastern Oklahoma (48 counties), and northeastern Texas (4 counties). These physiographic provinces are shown in Figure 3.7-1 and described in more detail in Appendix F.

Developed and Natural Settings

The majority of the potential Covered Activities would occur along existing ROWs and sites in disturbed landscapes. Figure 3.7-1 shows the facilities and developed and natural settings in the Plan Area. Human-made developments situated near potential Covered Activities include agricultural fields and structures, commerce structures, public buildings, oil and gas developments, pipeline ROWs, railroads, industrial structures, residences, and roads. Smaller portions of future activities in the Plan Area would occur in natural landscapes that contain little development beyond roads or trails.

Valued Landscapes

Present within each physiographic province in the Plan Area are natural features, built features, and cultural elements of significance in the human environment. The viewsheds of these sensitive features are of the highest level of concern to residents and visitors to the region. There are 383 federal, state, and local sensitive features in the Plan Area (Table 3.7-1) Appendix F shows the detailed listings of these features by Federal, state, and local jurisdictions of public places, roads, historic trails, towns, scenic overlooks, rivers, recreational sites and areas, and designated scenic byways. Most notable among these are the viewsheds of the many state parks, Boston Mountains Scenic Loop, Chickasaw National Recreation Area, Deep Fork National Wildlife Refuge (NWR), Fort Smith National Historic Site, Holla Bend NWR, Little River NWR, Mount Magazine Scenic Byway, Oka' Yanahli Preserve-Blue River, Ouachita National Forest, Ozark Highlands Scenic Byway, Ozark National Forest, Ozark Plateau NWR (multiple units), Pig Trail Scenic Byway, Pond Creek NWR, Sequoyah NWR, Tishomingo NWR, and West-Northwest Scenic Byway.

Table 3.7-1. Number of Viewshed Sensitive Features in the Study Area by Jurisdiction and State (ArcGIS Online 2017)

State	Federal	State	Local
Arkansas	37	25	21
Oklahoma	58	92	109
Texas	3	3	35
Total	98	120	165
Source: U.S. Geological Survey 2016			

1 **Figure 3.7-1: Physiographic Provinces**

2

3.7.3 Environmental Consequences

This section describes the potential impacts on visual resources from the implementation of the HCP, including potential impacts on people (the viewing public) and potential impacts on scenery. Section 3.1.2 describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area. Criteria for determining the context and intensity of impacts include the following.

- Value and uniqueness of landscape (common, scenic, or cultural).
- Existing utilities and ancillary facilities.
- Angle of view (eye-level, inferior, or superior).
- Distance from the observer (perceived size of structures or ROWs).
- Sun angle in relation to the structure: front-lit (bright), side-lit (contrasting), or back-lit (dark).
- Background condition (sky-lined, landform, vegetation, or building(s)).
- Vegetation reclamation recovery time.

Utility-related activities introduced in a scenic, undeveloped landscape, above the observer and sky-lined, in the immediate foreground, and brightly lit, would have greater impacts on people and would more substantially reduce the perceived quality of the scenery than utility-related activities in a common, developed landscape far from the observer and not brightly lit. Actions requiring ROW permits on lands under the jurisdiction of the Bureau of Land Management, National Park Service, or Forest Service would be subject to their respective requirements for visual resources, aesthetics, and scenery.

3.7.3.1 Impacts from Alternative B: Proposed HCP

Existing scenic quality may be lowered by the Covered Activities, depending on AEP's site-specific plan, existing scenic quality, existing landscape character, presence or absence of existing utility development (e.g., transmission lines, pipelines, land disturbances), and the effect of introducing change into that characteristic landscape as either a new or additional facility.

Visual resource changes and impacts would occur during the construction phase. These changes would be caused by vegetation clearing in ROWs and ground disturbance from construction of any additional access roads, laydown areas, utility structures, and ancillary facilities. Occupational Safety and Health Administration (OSHA)-required night-lighting during construction would cause light impacts on otherwise dark-sky conditions.

Impacts on the visual environment would continue into the operational phase through visibility of structures, overhead conductors, cleared ROWs in tree-covered landscapes, access roads, and ancillary facilities. Night-lighting for operations and maintenance activities would cause impacts on otherwise dark-sky conditions (International Dark Sky Association 2017). The most prominent visible elements would be towers along the ROW, which would be large, contrasting structures that would increase noticeable change to the visual environment. Impacts of a decommissioning phase would be similar to those of construction. Vegetation management, which includes vegetation maintenance or removal in linear ROWs, would cause visual contrasts in views out to 10 to 15 miles in tree-covered landscapes. These contrasts would remain until decommissioning and replanting of the ROW. Visual contrasts from vegetation management in landscapes without tree cover would

remain until grasses and shrubs re-inhabit disturbed areas, a process which typically happens within 3 to 5 years depending on factors such as the steepness of slopes, levels of sun and shade, and species used for reclamation.

Impacts on people and scenery would be directly related to the context and intensity of changes to the characteristic landscape. Impacts would be greater in cases where high-intensity Covered Activities are situated in the foreground and immediate foreground in areas of high quality views or important scenic settings.

3.8 Land Use

This section describes the land ownership and use in the study area, including a description of areas and programs with potential restrictions on development.

3.8.1 Approach and Methodology

Land use data from the U.S. Geological Survey were overlain with the Plan Area to determine Federal, state, and private land to quantify and describe land ownership by state in the study area. Farmland classification for the Plan Area, utilizing data from the NRCS, is used to quantify and describe agricultural uses in the study area. Conservation easement data from the National Conservation Easement Database was overlain with the Plan Area to quantitatively describe easements within the study area.

3.8.2 Affected Environment

3.8.2.1 Land Ownership

Almost 82 percent of the land in the study area is privately owned (Table 3.8-1). At a state level, 82 percent of study area lands in Oklahoma are privately owned, 97 percent of study area lands in Texas are privately owned, and 74 percent of study area lands in Arkansas are privately owned.

The state where the Federal government owns the most land is Arkansas (25 percent). Of the Federal lands in the study area, the U.S. Department of Agriculture (USDA) Forest Service manages 5 percent, followed by the United States Army Corps of Engineers (2 percent). Approximately 5 percent of land in the Plan Area belongs to federally recognized tribes (Table 3.8-1, percentages calculated from absolute acreages).

State-owned lands are most prevalent in Oklahoma (8 percent), followed by Arkansas with 1 percent and Texas with 0.01%.

New ROWs may need to be established during Covered Activities and could be anywhere in the Plan Area; therefore, land ownership where Covered Activities would take place is unknown.

Figure 3.8-1 shows a map of land ownership in the Plan Area.

3.8.2.2 Land Use

Table 3.2-3, in Section 3.2, *Biological Resources*, shows the current uses of land in the study area. Approximately 26 percent of the land area is used for agriculture and livestock. Within the study

area, Texas supports the greatest percentage of land in agricultural uses (37 percent); Arkansas supports the lowest percentage (23 percent).

Table 3.8-1. Land Ownership in the Plan Area by State, Acres

	Oklahoma	Arkansas	Texas	Total
Federal Land	939,214	1,270,369	75,410	2,284,994
Bureau of Land Management	502	40	0	542
Bureau of Reclamation	11,248	0	0	11,248
U.S. Army Corps of Engineers	516,292	137,642	25,728	679,662
Department of Defense	34,298	66,325	32,143	132,766
U.S. Forest Service	346,510	1,065,757	17,539	1,429,806
U.S. Fish and Wildlife Service	25,792	605	0	26,396
National Park Service	4,572	1	0	4,573
Tribal	1,563,461	0	0	1,563,461
Private	19,870,291	3,696,244	2,365,326	25,931,861
State	1,963,168	57,713	280	2,021,161
Total	24,336,135	5,024,326	2,441,016	31,801,477
Percent Federal	3.9	25.3	3.1	7.2
Percent Tribal	6.3	0	0	4.9
Percent State	8.1	1.1	0.01	6.4
Percent Private	81.7	73.6	96.9	81.5

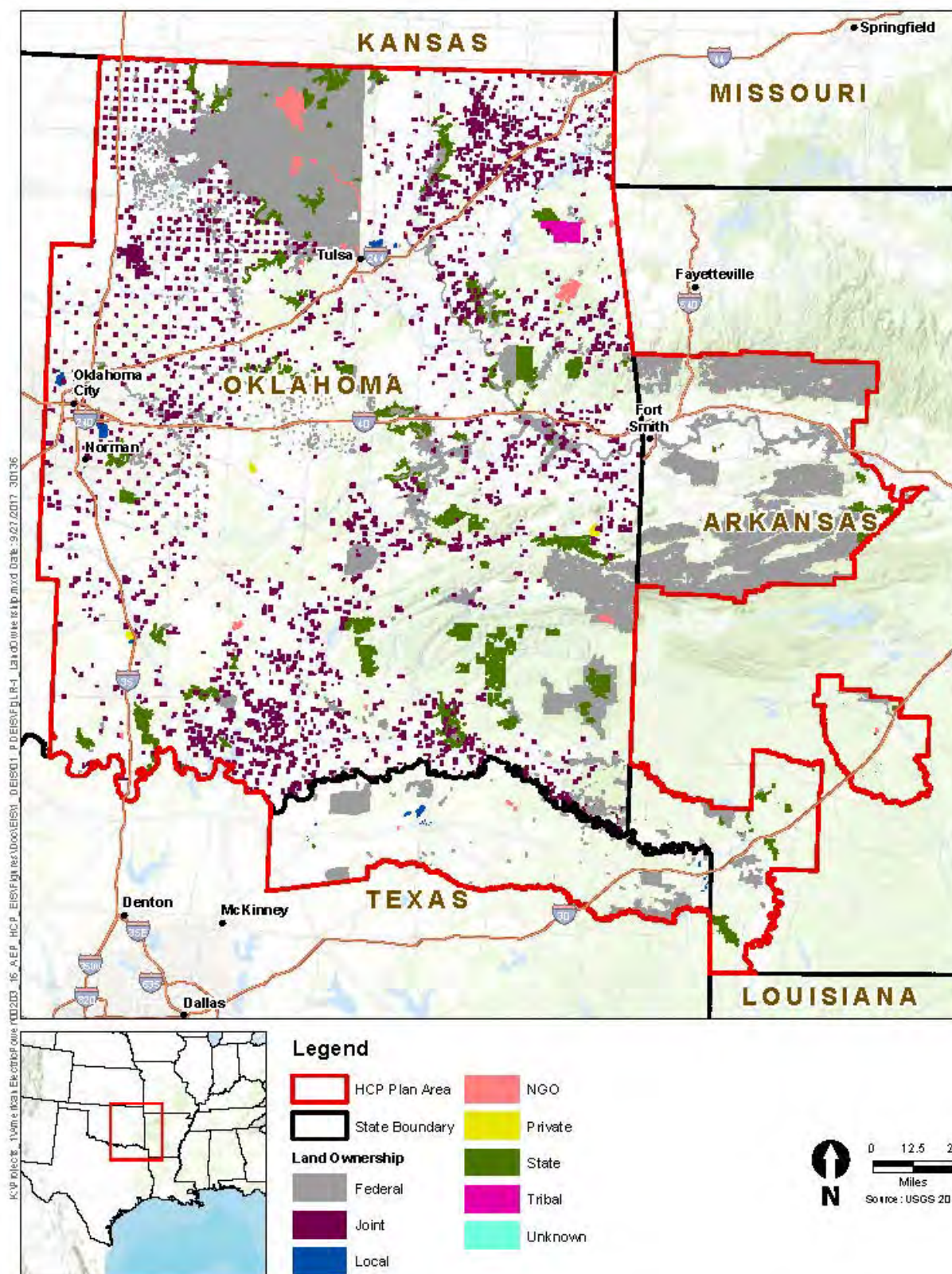
Source: U.S. Geological Survey 2017.

Other land uses include open water (3 percent), developed (7 percent), and other or undeveloped land uses (64 percent), which includes forest land, wetlands, shrub and grasslands, and barren land. The greatest share of undeveloped land is found in Arkansas (69 percent) and lowest is found in Texas (55 percent).

3.8.2.3 Important Farmland

The Farmland Protection Policy Act of 1981 (7 U.S.C. §§ 4201–4209) requires that Federal agencies and programs minimize conversion of farmland to nonagricultural uses (Natural Resources Conservation Service 2013). This includes *prime farmland* (most suitable for production of food, as determined by NRCS); *unique farmland* (land used for production of specific high-value crops), and *farmland of state or local importance* (other land capable of producing crops) (Natural Resources Conservation Service 2015).

As summarized in Table 3.8-2, Oklahoma has the most prime farmland in the study area, followed by Arkansas and Texas. Oklahoma is also the state with the greatest share of its lands considered prime farmland, followed by Texas and Arkansas. Arkansas has the greatest acreage of farmland of state or local importance (Table 3.8-2). Figure 3.8-2 shows the location of important farmland in the study area.

1 **Figure 3.8-1. Land Ownership in Plan Area**

2

Table 3.8-2. Important Farmland in the Plan Area

Farmland Class	Oklahoma	Arkansas	Texas	Total
Prime Farmland (Acres)	8,819,449	1,747,578	872,828	11,439,855
Farmland of Statewide Importance (Acres)	0	512,444	350,204	862,648
Prime farmland (Percent of State Land Area)	36.2	34.8	35.8	36.0
Farmland of State or Local importance (Percent of State Land Area)	0.0	10.2	14.3	2.7

Source: Natural Resources Conservation Service 2017.

3.8.2.4 Land Use Management

Land use in the study area is governed at the Federal, state, and local levels. Federal agencies (e.g., USDA Forest Service, Bureau of Land Management) typically use land use or management plans to guide use of resources in the areas they are responsible for. Resources are managed, in part, by granting permits, licenses and ROWs for recreational use, livestock grazing, mineral exploration, and development of renewable energy projects, among other activities. States develop management plans for state-owned lands and often engage in coordination with local governments to develop and monitor local government planning efforts for consistency with state policy. Local land use planning typically includes county comprehensive plans and zoning laws and regulations.

Under all land ownerships and uses, conservation easements can be used to create legally enforceable conservation obligations tied to specific property. Conservation easements are established between a landowner and a government agency or a land trust, and typically apply in perpetuity to a property. Approximately 0.39 percent of the land in the study area is under conservation easement (Table 3.8-3).

Table 3.8-3. Conservation Easements in the Plan Area, Acres and Percent of State Land Area

State	Oklahoma	Arkansas	Texas	Grand Total
Acres	70,970	32,762	19,400	123,132
Percent of State Land Area	0.29	0.65	0.79	0.39

Source: National Conservation Easement Database 2017.

3.8.2.5 Recreation

Federal lands in the study area are largely used for recreation. The largest Federal landholder is the USDA Forest Service (Table 3.8-1). Recreational activities available on national forests in the Plan Area include camping, hiking, biking, scenic driving, trail riding, water recreation, fishing, and hunting. Other Federal lands used for recreational purposes in the study area include lands managed by the Service and the Bureau of Land Management. State lands are also important outdoor recreational areas in the study area.

1 **Figure 3.8-2. Important Farmland in the Plan Area, by State**



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3

3.8.3 Environmental Consequences

This section describes the potential impacts on land use in the Plan Area from Covered Activities, including operations and maintenance of existing facilities and construction of electrical lines and facilities. Impact mechanisms or activities associated with Covered Activities that can affect land resources include change in land use from leases, easements, or land ownership; conflicts with land use compatibility where new ROWs are established as a result of construction; and temporary and long-term changes in the physical and natural environment that may affect recreational activities. Covered Activities taking place in existing ROWs will be compatible with existing land use, resulting in no impacts. These impacts are qualitatively described. Land use impacts are assessed at a programmatic level because the exact location and characteristics of Covered Activities that may be proposed and implemented in the Plan Area are not known. Impacts on land use from HCP implementation activities (i.e., restoration) are expected to be negligible and are therefore not described.

Wherever possible, Covered Activities should comply with all state and local land use plans and zoning laws and regulations.

Section 3.1.2 describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area.

3.8.3.1 Impacts from Alternative B: Proposed HCP

Land Rights

Construction of electrical lines and facilities would typically require land purchases, leases, and easements for placement of structures and associated infrastructure and for access to project sites. Right-of-way easements are required when a pathway benefits a particular person or benefits another parcel of land. Because transmission lines are located within specific areas based on customer needs, any right-of-way easements would be limited to Federal- and state-owned lands. Construction would typically require rights to disturb larger areas than those disturbed for operations, and some of the construction impacts on land rights would be temporary. Covered Activities should comply with all state and local land use plans and zoning laws and regulations to minimize impacts.

Changes in Land Use

Construction would temporarily disturb land for construction of access roads, placement of electrical lines, construction of facilities, and for staging areas. After construction, the land disturbed would be reduced to the land necessary for operations, the remaining being restored to its original use. During construction activities, land use of surrounding areas may be affected by road and access closures, traffic, noise, air quality, and visual disturbances. However, due to the short-term duration of construction activities, these impacts should be temporary and would vary by project. Covered Activities should comply with all state and local land use plans and zoning laws and regulations to minimize impacts.

Consistency with Land Use Programs and Plans

Construction of electrical lines and related facilities is often restricted by state or local authorities to avoid conflict with some types of land use, and to ensure consistency with state and local land use

plans and ordinances. To the extent covered by state and local regulations, construction projects would be required to be consistent with state and local land use plans and zoning laws and regulations to minimize impacts.

Temporary Disruption of Recreation Activities

Recreation activities in the Plan Area may be temporarily affected during construction by noise, air quality, and temporary road closures.

Consistency with Land Use Programs and Plans

Operations of electrical lines and related facilities would be required to be consistent with state and local land use plans and zoning laws and regulations to minimize impacts.

Long Term Impacts on Recreational Areas

Recreation activities in the vicinity of operations activities may be affected by noise and the visual quality of the scenery. The potential impacts on recreation activities from operations activities under Alternative B are expected to be infrequent and short-term.

3.9 Traffic and Transportation

This section describes the general transportation infrastructure in the study area including highways, roads, and railroads.

3.9.1 Approach and Methodology

Transportation infrastructure in the Plan Area is described from state transportation statistics provided by the departments of transportation along with U.S. Department of Transportation and the U.S. Census Bureau GIS data sources. The GIS data were overlain with the Plan Area to describe transportation infrastructure in the Plan Area. Impacts are assessed programmatically because the characteristics of individual project activities that may be proposed and implemented in the Plan Area are not known.

3.9.2 Affected Environment

Surface transportation in the study area is provided by a network of primary, secondary, and local roads and railroads. There are approximately 142,830 miles of public roads in the study area, including interstate highways, arterials, collector, and local roads (Table 3.9-1). Major U.S. Interstates in the study area include Interstates 30, 35, 40, 49 and 540. The study area also contains a total of 3,202 miles of railroads, including 2,402 miles in Oklahoma, 254 miles in Texas, and 545 miles in Arkansas. In addition, the study area has approximately 476 miles of inland waterways (Table 3.9-1).

Table 3.9-1. Transportation Infrastructure in the Plan Area by State

Type of Infrastructure	Oklahoma	Arkansas	Texas	Total
Public Roads (miles)	112,731	21,553	8,545	142,830
Freight Railroads (miles, all classes)	2,402	545	254	3,202
Inland waterways (miles)	297	179	0	476

Source: U.S. Census Bureau 2017 and U.S. Department of Transportation 2017.

3.9.3 Environmental Consequences

Transportation impacts are assessed in terms of the potential effects of the alternatives on transportation during construction, operations, and maintenance. Implementation of the alternatives may affect transportation use (traffic), transportation safety, and transportation infrastructure (including construction of access roads). Impacts are assessed at a programmatic level because the characteristics of individual actions that may be proposed and implemented in the Plan Area are not known. Impacts from operations and maintenance of existing facilities and construction of electrical lines and facilities are discussed separately for each alternative and are qualitatively described. Impacts on transportation from HCP implementation activities (i.e., habitat restoration) are expected to be negligible and, therefore, are not described below. Section 3.1.2 describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area.

3.9.3.1 Impacts from Alternative B: Proposed HCP

Covered Activities in the Plan Area may require construction of access roads or upgrades to public roads to allow access to the construction sites. Access roads would typically not be available for public use, and predevelopment conditions could be restored during reclamation.

Roads would be used for transportation of construction materials and workers, and impacts on local traffic may occur. Traffic would consist of construction employees' personal vehicles, truck traffic for material deliveries, concrete trucks for structure foundation work, and mobile cranes for erecting the structure. Potential impacts from the transportation of project materials and construction staff under Alternative B would be temporary.

Operations and maintenance of existing facilities and electric infrastructure would require using vehicles and equipment. These vehicles and equipment would travel by road, and would sometimes be required to work within the ROW on electrical lines. Potential impacts on transportation from these activities could include disruption of traffic and road closures. These impacts are usually temporary and would often occur on remote or rural roads with relatively low traffic volumes.

3.10 Socioeconomic and Environmental Justice

This section describes socioeconomic and environmental justice conditions in the study area, including population, housing, labor force, output and earnings, and minority and low-income populations. The socioeconomic impact analysis consists of assessing the population in terms of size, housing characteristics, labor and employment, and income. Assessing adverse impacts entails evaluating the potential for community disruption and impacts on community structure associated with the proposed action (Council on Environmental Quality 1997). An environmental justice analysis consists of assessing to what extent minority or low-income populations are disproportionately affected by adverse impacts. Characterization of the affected area for an environmental justice analysis consists of identifying minority and low-income populations present in the study area (Council on Environmental Quality 1997).

3.10.1 Approach and Methodology

Socioeconomic and environmental justice issues in the study area are described using the U.S. Census Bureau's American Community Survey 5-Year Estimates (U.S. Census Bureau 2015). Tables throughout this section describe the population projections for each county in the study area using data from the Texas Demographic Center, Arkansas Economic Development Institute, and Oklahoma Department of Commerce. Additional GIS data depicting tribal lands in the area are also used in this analysis. Tribal lands are overlain with the study area to determine their proportional representation in the study area. In addition, the Service quantifies the presence in the study area of minorities or individuals who are in poverty above the average rates found throughout the study area.

3.10.2 Affected Environment

3.10.2.1 Population

Table 3.10-1 shows the 2015 population by state in the study area, as well as the estimated population through 2050. Eastern Oklahoma makes up the majority of the study area, and the majority of the study population are residents there. The Oklahoma counties in the study area comprise 82 percent of the state's population. In Arkansas, the study area counties comprise 13 percent and the Texas counties in the study area comprise only 0.7 percent of their respective state populations. The Oklahoma counties in the study area are projected to grow at a faster rate than the United States in general, with a 22.6 percent growth rate, while Texas and Arkansas counties are projected to grow at a much slower rate than the United States overall (10.5 percent for Texas counties and 5.9 percent for Arkansas counties).

Table 3.10-1. Population in the Study Area (2015–2050)

Geography	2015^a	2020	2030	2040	2050	Projected Growth Rate (%)
Arkansas Counties ^b	388,982	393,183	399,376	406,186	413,461	5.92
Oklahoma Counties ^c	3,160,384	3,325,833	3,577,428	3,828,945	4,080,455	22.55
Texas Counties ^{d,e}	189,036	197,200	204,430	208,243	211,199	10.49
Study Area	3,738,402	3,916,216	4,181,234	4,443,374	4,705,115	20.55
United States^f	321,369,000	334,503,000	359,402,000	380,219,000	398,328,000	19.32

^a Source: U.S. Census Bureau 2015.
^b Source: Arkansas Economic Development Institute 2014.
^c Source: Oklahoma Department of Commerce 2012.
^d Assumes half the migration rate experienced from 2000–2010.
^e Source: Texas Demographic Center 2016.
^f Source: U.S. Census Bureau 2014.

3.10.2.2 Housing

As of 2015, the overall housing vacancy rate in the study area (13.7 percent) was slightly above the United States average (12.3 percent). Table 3.10-2 shows housing in the study area. Vacancy rates at the county level in the study area are not shown in the table, but these county-level vacancy rates range from 7.5 percent in Rogers County, Oklahoma, to 40.5 percent in Marshall County, Oklahoma.

Table 3.10-2. Housing Occupancy and Vacancy in the Study Area (2015)

Geography	Total	Occupied	Vacant	Vacancy Rate (%)
Arkansas Counties	173,202	149,189	24,013	13.9
Oklahoma Counties	1,393,953	1,205,650	188,303	13.5
Texas Counties	82,613	69,619	12,994	15.7
Study Area	1,649,768	1,424,458	225,310	13.7

Source: U.S. Census Bureau 2015.

3.10.2.3 Labor Force

Unemployment rates for the labor force in the study area, was 7.7 percent on average, and ranged from 3.6 to 11 percent in 2015. This is compared to the 2015 United States unemployment rate of 8.3 percent. Table 3.10-3 shows the labor force in the study area. Unemployment rates vary considerably over time and are not possible to estimate reliably over the planning horizon of the HCP (30 years). For comparison, the average unemployment rate in the United States over the 50-year period between 1966 and 2014 was 6.1 percent (Bureau of Labor Statistics 2015).

Table 3.10-3. Labor Force in the Study Area (2015)

Geography	Labor Force ^a	Labor Force Participation Rate (%)	Employment/Population Ratio (%)	Unemployment Rate (%)
Arkansas Counties	305,155	55.6	50.8	8.5
Oklahoma Counties	2,468,684	55.6	51.5	7.3
Texas Counties	150,026	53.3	49.2	7.5
Study Area	2,923,865	54.8	50.5	7.7
United States	251,221,309	63.7	58.0	8.3

Source: U.S. Census Bureau 2015.

^a Population 16 years and over.

As shown in Table 3.10-4, the study area comprises just over 1 percent of the total United States labor force, which is defined as the population over the age of 16. The study area has a higher percentage of laborers in the agricultural, forestry, fishing, hunting and mining, construction, manufacturing, and public administration industries than the United States average. The professional, scientific, and management and administrative and waste management services industry is half that of the national average. Critical industries for employment include education, retail trade, and manufacturing, together comprising over 48 percent of the study area workforce.

3.10.2.4 Earnings

The study area's median household income by county, shown in Table 3.10-5, is 27 percent lower than the median United States household income in 2015. Median incomes vary widely across the study area, ranging from \$30,617 in Choctaw County, Oklahoma to \$58,139 in Rogers County, Oklahoma.

Table 3.10-4. Median Household Income in the Study Area (2015)

Geography	Median Household Income (\$)
Arkansas Counties	37,035.64
Oklahoma Counties	41,926.43
Texas Counties	39,763.00
Study Area	39,575.02
United States	53,889.00

Source: U.S. Census Bureau 2015.

3.10.2.5 Environmental Justice

Characterization of the affected area for environmental justice analysis consists of identifying minority and low-income populations present in the study area. The term *minority* refers to members of American Indian, Asian or Pacific Islander, Black, or Hispanic groups. The term *low-income* refers to individuals that are below the poverty thresholds defined by the U.S. Census. Minority and low-income *populations* are communities where the presence of minorities or low-income people is greater than 50 percent or meaningfully greater than in a geographic area of comparison (Council on Environmental Quality 1997).

Table 3.10-5. Employment by Industry in the Study Area (2015)

Industry Sectors	Study Area		United States	
	Estimate	Percent (%)	Estimate	Percent (%)
Civilian employed population 16 years and over	1,656,738	1.14 ^a	145,747,779	100.00
Agriculture, forestry, fishing and hunting, and mining	64,233	5.95	2,852,402	2.00
Construction	117,028	7.33	9,027,391	6.20
Manufacturing	184,557	13.21	15,171,260	10.40
Wholesale trade	43,493	2.19	3,968,627	2.70
Retail trade	193,821	11.50	16,835,942	11.60
Transportation and warehousing, and utilities	83,921	5.49	7,226,063	5.00
Information	28,823	1.17	3,094,143	2.10
Finance and insurance, and real estate and rental and leasing	92,084	4.35	9,578,175	6.60
Professional, scientific, and management, and administrative and waste management services	136,793	5.83	16,074,502	11.00
Educational services, and health care and social assistance	381,239	23.73	33,739,126	23.10
Arts, entertainment, and recreation, and accommodation and food services	148,926	8.33	13,984,957	9.60
Other services, except public administration	84,586	4.64	7,198,201	4.90
Public administration	97,234	6.29	6,996,990	4.80

^a Percentage of United States estimate.
Source: U.S. Census Bureau 2015.

Table 3.10-6 shows the share of the population in the study area that belongs to a minority population group or that is low-income. Two of the 62 counties in the study area have a majority (greater than 50 percent) of minorities, Adair County, Oklahoma with 62 percent (40 percent American Indians and Alaska Natives) and Cherokee County, Oklahoma with 54 percent (33 percent American Indians and Alaska Natives). Twelve of the 62 counties in the study area have larger minority populations than the country as a whole. American Indians and Alaska Natives (primarily American Indians) reside at a higher rate than the national average in 54 of the 62 counties of the study area, most of which are in Oklahoma. Furthermore, 50 of the 62 counties have a greater share of their populations in poverty than the country as a whole.

Figure 3.10-1 shows counties in the study area with the presence of all minorities or individuals in poverty above the average rates of the study area as well as tribal land holdings. Minority and low-income populations may also exist at a smaller scale (within counties). The potential presence of minority populations in subcounty areas is typically less likely in rural areas, but may still occur (Housing Assistance Council 2012). The share of the population that is low-income is typically greater in rural areas than in urban areas (U.S. Department of Agriculture, Economic Research Service 2015).

1 **Table 3.10-6. Minority and Low-Income Presence in the Study Area (2015)**

Geography	Total Population	Percentage of Total Population (%)									Individuals in Poverty ^a
		White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race	Hispanic or Latino	Two or More Races	All Minorities Combined	
Arkansas Counties	388,982	82.5	10.4	1.0	1.3	0.0	2.4	8.0	2.3	25.5	21.3
Oklahoma Counties	3,160,384	72.1	3.8	12.2	0.8	0.1	1.5	5.4	9.5	33.3	18.8
Texas Counties	189,036	79.3	15.3	0.5	0.6	0.1	1.5	8.0	2.9	28.8	18.4
Study Area	3,738,402	78.0	9.8	4.6	0.9	0.1	1.8	7.1	4.9	29.2	19.5
United States	316,515,021	62.3	12.3	0.7	5.1	0.2	0.2	17.1	2.2	37.8	15.5

^a Population for whom poverty status is determined.

Source: U.S. Census Bureau 2015.

1



3.10.3 Environmental Consequences

This section assesses the potential socioeconomic and environmental justice effects of the alternatives during construction and operations. Potential socioeconomic and environmental justice impacts are assessed at a programmatic level due to the general characteristics and unknown locations of most of the Covered Activities.

Implementation of the alternatives may affect output, employment, and earnings in the study area. Estimations of the general magnitude of impacts on output, employment, and earnings at the state and county level can be compared to the baseline socioeconomic conditions discussed in Section 3.10.2, *Affected Environment*.

The estimates of relative impacts on output, employment, and earnings allows for an informed qualitative discussion of the potential impacts on population, demand for housing and public services, and fiscal revenues. Additional discussion of potential socioeconomic impacts includes a qualitative discussion of the effects of the Covered Activities on property values and on effects on minority or low-income populations.

The following discussion of potential impacts on minority and low-income populations is based on a review of the results in the literature, focusing on whether any potentially high and adverse human health or environmental impacts were identified. Section 3.1.2 describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area.

3.10.3.1 Impacts from Alternative B: Proposed HCP

Impacts to Socioeconomics and environmental justice are analyzed for Service approval of the HCP and issuance of a 30-year ITP to AEP for incidental take of the ABB from AEP's maintenance, operation, and expansion of its electrical facility activities (i.e., the Covered Activities) in the Plan Area.

Output, Employment, and Income. Operations under Alternative B are not anticipated to vary from Alternative A in local employment, earnings, or add value to local economies.

Population. We do not expect any perceptible impact on the number of people living in the Plan Area in response to either the construction-related or operations-related impacts of Alternative B, because AEP would implement its Covered Activities with the current levels of available employment in the study area.

Demand for Housing and Public Services. We do not expect any perceptible impact on demands for housing and public services in the Plan Area in response to either the construction-related or operations-related impacts of Alternative B because AEP would implement its Covered Activities with the current levels of available employment and public services in the study area.

Property Values. A review of the current literature suggests there is little evidence of an impact of new aboveground electrical lines and new substations and switching facilities on surrounding property values. Several pricing studies have examined the impact of transmission line proximity on property values (Jackson and Pitts 2010). In most cases pricing studies found the impacts of being located close to transmission lines on property values to be small, ranging from 1 to 10 percent of average property values. When negative impacts on property values were observed, studies found that these impacts diminished quickly with distance (i.e., within a few hundred feet) and also

weakened over time, disappearing entirely in 4 to 10 years. Despite the conclusions of the literature review conducted by Jackson and Pitts (2010), individual studies have found significant impacts of transmission lines on property values. These lasting effects on property values would be likely due to construction. It is difficult to disentangle the operations-related impacts from the construction-related impacts.

Table 3.10-7. Impacts on Property Values Related to Proximity to Infrastructure

Study	Type of Impact	Power Line Type (kilovolt)	Property Value Impact (2012 \$)	Property Value Impact (% of mean home price)	Distance Factor
Des Rosiers (2002)	Proximity to high-voltage transmission lines	315	-\$21,470 to -\$26,430	-9.8% to -12.0%	< 50 meters
		315	-\$11,660	-5.3%	51 to 100 meters
		315	-\$8,910	-4.1%	101 to 150 meters
Wolverton and Bottemiller (2003)	Proximity to high-voltage transmission lines	115 to 500	No statistically significant impact	No statistically significant impact	
Chalmers and Voorvaart (2009)	Proximity to high-voltage transmission lines	345	No statistically significant impact	No statistically significant impact	Any distance
			Significant effect in some models	Significant effect in some models	If property encumbered by easement
Chalmers (2012)	Proximity to high-voltage transmission lines	500	Impact was seen in some case studies for rural residential (<5 acres), but impact was not monetized. Agricultural land saw no effect.		Within 500 feet of the centerline of a high voltage transmission line

Consumer Electricity Rates. We cannot predict the extent to which Covered Activities in the Plan Area would affect consumer electricity rates.

Fiscal Revenues. Neither construction-related nor operations-related Covered Activities for Alternative B are anticipated to contribute to state and local fiscal collections any differently than Alternative A.

Environmental Justice. The existence of disproportionately high and adverse human health or environmental effects on minority or low-income populations depends on the following.

1. The presence of minority or low-income populations in the study area.
2. The existence of high and adverse human health or environmental effects (adverse impacts of sufficient magnitude or severity to potentially lead to disproportionately high and adverse effects).
3. The incidence of high and adverse human health or environmental effects disproportionately on minority or low-income populations.

Section 3.10.3, *Environmental Justice*, describes the presence of minority or low-income populations in the Plan Area at the state and county level. Both minority and low-income counties are present

throughout the Plan Area. Communities may also form minority and low-income populations within the counties, and are likely to be present throughout the Plan Area. Additionally, tribal lands are present and dispersed throughout the northern and central regions of Oklahoma.

No potential adverse human health or environmental effects from construction were identified for the Plan Area as a whole. However, adverse effects from construction may occur at specific locations. This could be true with respect to impacts, including but not limited to, noise, visual resources, and land use. Impacts from construction and operations are not anticipated to be adverse or disproportionately affect low-income or minority populations. However, locations and specific elements of the construction-related and operational activities are not known.

Compared to Alternative A, both construction-related impacts and operations-related impacts would be the same under Alternative B.

3.11 Public Health and Safety Including Noise

This section identifies the public health and safety issues in the Plan Area, including activities typical of operations, construction, and maintenance of electric transmission and distribution lines that can result in public health, safety, or noise impacts.

3.11.1 Approach and Methodology

Public health, public safety, and noise in the Plan Area are discussed generally throughout this section because the location of individual activities that may be proposed and implemented are not known.

3.11.2 Affected Environment

3.11.2.1 Public Health and Safety

Construction, operation, and maintenance activities in the Plan Area may generate public health and safety concerns.

Public health and safety issues arising from construction activities include the potential for injuries to workers resulting from falls from tall structures; falls into open excavations; accidents associated with movement of construction vehicles, equipment, and materials (e.g., where a worker is struck by heavy equipment, or caught/compressed between two structures); and electrocution. Members of the public may also be exposed to some of these issues due to general construction site hazards and the siting of industrial equipment in potentially accessible areas.

Public health and safety issues associated with operations and maintenance activities include stray voltage, fires and fuels, and accidents associated with movement of maintenance vehicles, equipment, and materials. These concerns are likely to be limited to where transmission lines cross or parallel roads or are in close proximity to homes or commercial building sites.

There has been concern over the years with electric magnetic fields (EMF) and their effect on human health. Research has shown, however, that EMFs do not cause adverse health effects in humans (National Institutes of Health 2002; World Health Organization 2017; Public Service Commission of Wisconsin 2013). Potential issues resulting from EMFs are related to stray voltage and fires.

Stray Voltage

Electric transmission and distribution lines and facilities may generate stray voltage, which is a low-level electrical current that results primarily from an improperly grounded electrical distribution system. Stray voltage is a small voltage (less than 10 volts as defined by the U.S. Department of Agriculture) that can be measured between two possible contact points. When these two points are connected together by an object, such as a person, a current flows, and the person may experience an electrical shock (Bonneville Power Administration 2007). Stray voltage may result from damaged, corroded, or poorly connected wiring or damaged insulation. The generation of stray voltage is based on factors such as operating voltage, geometry, shielding, rock/soil electrical resistivity, and proximity to ungrounded or poorly grounded metal objects.

Fires and Fuels

Fire risks associated with the Covered Activities are similar to those associated with other industrial facilities. Electrical generating equipment and cables, along with storage and use of various oils (including diesel fuels, lubricating oils, and hydraulic fluids), can create the potential for fire emergencies in substations, staging areas, and operations buildings. Vegetation that comes into contact with electric lines can also start fires. Fire emergencies may result in injuries to, or fatalities of, workers or members of the general public.

Vehicle, Equipment, and Materials Accidents

Operation and maintenance activities associated with the Covered Activities include the use of heavy machinery and equipment, along with various maintenance-related materials. Accidents during operations and maintenance activities may result in injuries or fatalities to workers or members of the general public.

3.11.2.2 Noise

Construction, operation, and maintenance activities in the Plan Area can generate noise concerns. Both objective and subjective factors can be considered when evaluating the community reaction to noise. Objective factors include absolute level and background noise, character of noise, and temporal and seasonal factors. Subjective factors include history of previous exposure, community attitude, and type of neighborhood.

Acoustics

Human responses to noise differ depending on the time of the day; for example, humans experience more annoyance from noise during nighttime hours. The day-night average sound level (DNL) is the average noise level over a 24-hour period, after the addition of 10 dB to sound levels from 10 p.m. to 7 a.m. to account for the greater sensitivity of most people to nighttime noise. The outdoor limit for protecting public health and welfare in residential areas is recognized by many Federal agencies, including the EPA, as DNL 55. The dividing line between acceptable and unacceptable noise levels in residential areas is considered to be DNL 65.

Human responses to changes in sound levels generally exhibit the following characteristics (Rogers et al. 2006).

- Except under laboratory conditions, a 1-dB change in sound level is not perceptible.

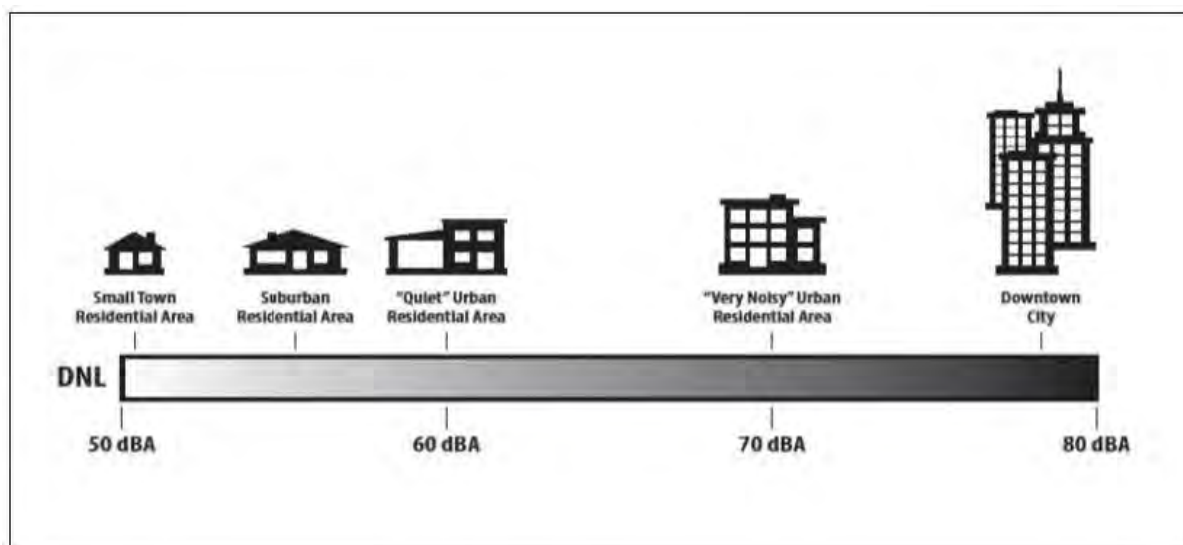
- A 3-dB change in sound level (twice the sound energy) is considered barely noticeable.
- A 5-dB change in sound level (more than three times the sound energy) would typically result in a noticeable community response.
- A 10-dB change in sound levels (10 times the sound energy), which is generally judged to be a doubling in loudness, would almost certainly cause an adverse community response.

Ambient Noise

Ambient or background noise levels represent the total amount of noise in an area and are used to compare the effects of a new noise source relative to existing conditions. Figure 3.11-1 shows ambient noise levels typical of areas with various population densities; population densities in the Plan Area are described in Section 3.10, *Socioeconomics and Environmental Justice*.

As indicated in Figure 3.11-1, ambient noise levels associated with high-density urban areas (70 to 80 dBA) are much higher than those associated with small residential areas (50 dBA). The addition of a new noise source (such as new facilities) to an area with high existing ambient noise levels may be masked by existing noise sources and therefore less audible than in an area with low ambient noise levels. In rural areas with low ambient noise levels, a new noise source (such as new facilities) may be audible at distances farther from the facility than their urban counterparts, although low population densities in rural areas may have fewer sensitive receptors that would potentially be affected by the noise. Ambient noise levels and population density are therefore important parameters in characterizing the affected environment.

Figure 3.11-1. Typical Day-Night Average Noise Levels



Source: U.S. Environmental Protection Agency 1974.

3.11.3 Environmental Consequences

This section describes the potential impacts on public health and safety and noise in the Plan Area from Covered Activities, including operations and maintenance of existing facilities and construction of electrical lines and facilities. Impact mechanisms or activities associated with Covered Activities

that can affect public health and safety and noise include site preparation, movement of vehicles and equipment, fires, stray voltage, and construction-, operations- and maintenance-related noise increases. Public health and safety, as well as potential noise impacts from operations and maintenance of existing facilities and construction of electrical lines and facilities are discussed separately and are qualitatively described. Impacts are assessed at a programmatic level because the location of Covered Activities that may be proposed and implemented in the Plan Area are not known. Impacts on public health and safety including noise from implementing the HCP's conservation strategy (e.g., restoration) are expected to be negligible and therefore are not described. Section 3.1.2 describes the potential impacts from Alternative A, the No Action Alternative, and Alternative C, HCP with Reduced Permit Term and Plan Area

3.11.3.1 Impacts from Alternative B: Proposed HCP

Public Health and Safety

As noted in Section 3.11.2.1, construction risks could result in injuries to the general public and construction workers, including the potential for collisions with construction vehicles, equipment, and materials; falls from structures or falls into open excavations; and electrocution. Public access to construction areas would be limited; therefore, the potential risk to the general public would be low. The potential risk of construction-related injuries to workers could be minimized through safety training, use of appropriate safety equipment, and development and adherence to health and safety plans.

Potential operation-related public health and safety risks that could result from Alternative B are described below. These potential risks include impacts from stray voltage, fuels and fire, and accidents associated with movement of maintenance vehicles, equipment, and materials. Adherence to standard industry safety measures and compliance with applicable state and local regulations would minimize the following public health and safety risks resulting from the Alternative B.

Stray Voltage

Operations may generate stray voltage, which is a low-level electrical current that results primarily from an improperly grounded electrical distribution system. Adherence to proper electrical installation and grounding practices prevents stray voltage from occurring. All projects would be equipped with electrical systems that meet applicable safety and design regulations, and proper electrical installation protocols would be followed.

Fuels and Fire

Operations may result in exposure of workers or the general public to hazardous fuels and fires. Adherence to project health and safety plans and communication and coordination between facility and electric workers and emergency response personnel would minimize the potential for impacts on workers and the general public.

Vehicle, Equipment, and Materials Accidents

Operations and maintenance activities may result in accidents involving workers or the general public involving heavy machinery, equipment, or materials. Adhering to standard industry safety measures and complying with applicable state and local regulations would minimize the potential for impacts on workers and the general public.

Noise

Construction noise was evaluated for typical construction equipment operating on a construction site (Table 3.11-1). For purposes of analysis, we assumed the primary sources of noise during these activities would be truck and vehicle traffic, heavy earth-moving equipment, and other construction equipment or infrastructure powered by internal combustion engines used on site. It is anticipated that most Covered Activities would occur during the day, with potential nighttime work occurring during emergency repair activities.

Construction noise would cause a temporary and short-term increase to the ambient sound environment within the affected area. Workers associated with construction activities would be expected to wear appropriate hearing protection as required by OSHA regulations (29 CFR 1910.95).

Table 3.11-1. Maximum Noise Levels at 50 Feet for Common Construction Equipment

Equipment Type	Maximum Noise Level (Lmax) at 50 feet (dBA, slow)
Compactor (ground)	80
Dozer	85
Dump truck	84
Excavator	85
Generator	82
Grader	85
Pickup truck	55
Warning horn	85
Crane	85

Source: Federal Highway Administration 2006
dBA = A-weighted decibels; Lmax = maximum noise level

Operation activities include repair and maintenance of existing electrical lines, including pole replacement and repair, and emergency response and outage repair. These types of activities would include heavy trucks and machinery similar to those in use during construction (Table 3.11-1). Occasionally off-road vehicles (e.g., ATVs) and helicopters would be needed for remote repairs of electrical lines. The duration and quantity of noise-generating vehicles and machines would be substantially reduced from construction activities.

Helicopter noise generation is regulated by the Federal Aviation Administration, with noise limits ranging from an effective perceived noise level of 89 at take-off to 110 at landing approach (Federal Aviation Administration 2001). The use of ATVs and helicopters would be infrequent and would typically take place only in remote areas inaccessible by road and vehicles.

4.1 Introduction

The Council on Environmental Quality Regulations that implement the National Environmental Policy Act (NEPA) define a cumulative impact as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 Code of Federal Regulations [C.F.R.] § 1508.7). Cumulative impacts can result from individually minor but collectively noteworthy actions taking place over a period of time. Cumulative projects that 1) overlap the Plan Area, 2) result in take of ABB, and 3) occur in close proximity to Covered Activities would be expected to have more potential for cumulative impacts than those projects more geographically separated. This chapter identifies U.S. Fish and Wildlife Service (Service) Biological Opinions that address ABB take for projects in the Plan Area and analyzes the potential cumulative impacts when considered with the Proposed Action and alternatives. Section 4.2 describes the past and present actions within the Plan Area; Section 4.3 describes the reasonably foreseeable future actions within the Plan Area; and Section 4.4 provides the evaluation of cumulative effects. Where specific impacts to ABB were estimated or analyzed for a project, that information is summarized here.

4.2 Past and Present Actions within the Plan Area

Portions of the Plan Area have undergone extensive urban or industrial development, while other portions are primarily agricultural and have experienced little development. Major developments have included conversion of native vegetation to agricultural crops or grazing land, urban or rural development, transportation projects, rights-of-way clearing for utilities, and development of industrial facilities, such as oil and gas pipelines, well pads, and associated facilities. The result is a variety of past and present actions affecting ABB within the Plan Area that have resulted in the existing conditions described in Chapter 3, *Affected Environment and Environmental Consequences*. The discussion below details recent past and present actions with potential to affect the ABB based on Biological Opinions for ABB.

4.2.1 TransCanada Gulf Coast Pipeline Project

The TransCanada Gulf Coast Pipeline Project is an approximately 487-mile, 36-inch crude oil pipeline beginning in Cushing, Oklahoma, and extending south to Nederland, Texas. Approximately 155 miles of the pipeline is sited in Oklahoma, with the remainder in Texas (TransCanada 2014).

Anticipated impacts from this project to ABB habitat and individuals in the Plan Area were identified in the Keystone XL Project Final Environmental Impact Statement for the Gulf Coast Segment (U.S. Department of State 2011), and subsequently revised in the Keystone Gulf Coast Pipeline Project Final Environmental Assessment (Exp Energy Services 2012) and concurrent HCP (Enercon Services 2012). Both temporary and permanent impacts to habitat and individual ABBs were identified.

Anticipated effects include temporary impact to up to 435 acres and permanent impact to 17 acres of potential ABB habitat by construction, impact to approximately 33 acres of potential ABB habitat by fragmentation due to the permanent alteration of existing cover type (from forest to grassland) in areas that are not already fragmented, and 65 acres of impacts to ABB habitat during operations and maintenance of the project (in addition to the 485 acres of impacts noted above).

The HCP developed for the Gulf Coast Pipeline Project established minimization and conservation measures as well as mitigation requirements to minimize and offset adverse impacts to the ABB. Based on the Biological Opinion and incidental take permit (TE80492A) issued pursuant to section 10(a)(1)(B) of the ESA by the Service, incidental take under this project may occur within a maximum of 550 acres of the Gulf Coast Pipeline Project action area in the form of harm, harassment, and/or mortality over the 50-year permit duration. Mitigation for these impacts (865 acres) as well as a conservation bank on an associated 735 acres designed to provide for future potential ABB species credits needs of various entities (USFWS 2012), have resulted in a 1,600-acre preserve for the ABB.

4.2.2 Flanagan South Pipeline Project

Enbridge, Inc. has completed the construction stage of the Flanagan South Pipeline Project. This project includes a nearly 600-mile, 36-inch diameter interstate crude oil pipeline that originates in Pontiac, Illinois, and terminates in Cushing, Oklahoma, mostly along Enbridge's Spearhead Pipeline. Counties within the Plan Area intersected by the Flanagan South Pipeline include Osage, Pawnee, Payne, and Washington counties in Oklahoma. The Flanagan South Pipeline Project modified 205.5 acres of ABB habitat: 115.5 acres of occupied ABB habitat was disturbed during construction, and 90 acres of habitat in the ABB range will be disturbed during operation and maintenance activities over the next 50 years. However, most effects to the ABB are expected to be infrequent, of short duration, and reversible, with expected recolonization of almost all of this area and adverse impacts offset through mitigation. Consequently, the Service determined this project would have a negative effect on the ABB, but would not appreciably reduce its survival and recovery, and as such, would not jeopardize the continued existence of the species (USFWS 2013).

4.2.3 Seaway Twinning Pipeline

Enbridge, in partnership with Enterprise, has constructed the Seaway Twinning Pipeline, a 30-inch diameter pipeline that parallels the already completed and operational Seaway crude oil pipeline, an approximately 512-mile, 30-inch pipeline between Cushing, Oklahoma, and the Freeport, Texas area, and a terminal and distribution crude oil network originating in Texas City, Texas. This pipeline became operational in mid-2014. The pipeline intersects the following Plan Area counties in Oklahoma: Lincoln, Bryan, Johnston, Pontotoc, Pottawatomie, and Seminole.

4.2.4 Diamond Pipeline Project

The Diamond Pipeline Project, which is being developed through collaboration between Valero Energy Corporation and Plains All American Pipeline Company, is currently being constructed. The proposed project consists of approximately 424 miles of 20-inch pipeline between Cushing, Oklahoma, and Memphis, Tennessee to transport crude oil produced from the Permian Basin, Bakken Shale, and Mid-continent oil regions. Plan Area counties crossed by the proposed route

include Lincoln, Creek, Okmulgee, Muskogee, McIntosh, Haskell, and Le Flore counties in Oklahoma, and Sebastian, Logan, Franklin, and Johnson counties in Arkansas (Peacock 2014).

4.2.5 Tallgrass Energy Pony Express Pipeline Project

The Tallgrass Energy Pony Express Pipeline Project involved the conversion of a portion of an existing 500-mile natural gas pipeline and new construction of a 260-mile, 24-inch extension from Lincoln County, Kansas to Payne County, Oklahoma. The nearly 700-mile pipeline transports from 230,000 to 320,000 barrels per day of light sweet crude oil from the Bakken production area of North Dakota and eastern Montana. Approximately 80 percent of the route is collocated with existing energy infrastructure. The pipeline route originates in Guernsey, Wyoming, continues southeast through the corners of northeast Colorado and southwest Nebraska, turns south at Lincoln, Kansas, and terminates at an existing petroleum facility in Cushing, Oklahoma. Counties intersected within the Plan Area include Kaye, Noble, and Payne. The Northeast Colorado Lateral (NECL) is a 70-mile extension built in 2014–2015 that interconnects with the Pony Mainline near Sterling, Colorado, and provides transportation service from the Niobrara Shale in Northeastern Colorado and Southeastern Wyoming. The first two portions are referred to collectively as the Pony Mainline. The Pony Mainline and NECL were placed in service in October 2014 and April 2015, respectively (Tallgrass Energy 2014).

4.2.6 Clean Lines Project

The proposed Clean Lines Project would traverse 209 miles through six counties (Payne, Lincoln, Creek, Okmulgee, Muskogee, and Sequoyah) in the ABB's current range in Oklahoma and three counties (Franklin, Crawford, and Johnson) in Arkansas, all within the Plan Area. The Clean Lines Project also traverses Conservation Priority Areas (CPAs) identified by the Service in Muskogee and Sequoyah counties, Oklahoma. About 39 miles of the proposed transmission line route lies within the identified CPA. Only 9 miles of the route are composed entirely of unfavorable habitat (100 percent unfavorable). The total area within this corridor, subtracting the length that is 100 percent unsuitable (9 miles), is 29,091 acres. Thus, the Service estimates that 14,545.5 acres of suitable/favorable ABB habitat would be affected by the proposed Clean Lines Project.

4.2.7 Other Oil and Gas Activities in Oklahoma

The Service approved the Oil and Gas Industry Conservation Plan (ICP) in 45 Oklahoma counties on May 21, 2014. The ICP Plan Area is subsumed by the AEP HCP Plan Area. Actions covered under the ICP may result in take of the ABB associated with activities including, but not limited to, exploration, development, extraction, and transport and/or distribution of crude oil, natural gas, and other petroleum products. Incidental take is limited to a cumulative total (from all permits issued under the ICP) of 32,234 acres of ABB habitat. Incidental take associated with construction of oil and gas projects was permitted until May 20, 2016, and incidental take associated with operations and maintenance was permitted for up to 20 years. In 2016, the ICP was amended to extend the ICP sign-up period, submission of individual project plans period, project construction period, and ICP/permit expiration by 3 years. Because of reduced industry activity and impacts resulting from current market conditions, the Service has issued less take than anticipated under the 2014 ICP when it was approved. To date, we have issued 62 permits under the ICP and approved impacts to 2,902.3 acres of ABB habitat. Mitigation through purchase of conservation bank credits is being implemented to fully offset those impacts.

4.3 Reasonably Foreseeable Future Actions within the Plan Area

As mentioned above, a comprehensive and quantifiable, project-specific evaluation of all reasonably foreseeable actions within the Plan Area was not completed in the assessment of cumulative impacts due to uncertainties caused by the broad spatial extent of the Plan Area and the multi-decadal duration of the Permit. However, major reasonably foreseeable development trends that could affect ABB in the Plan Area were identified and include oil and gas development, transportation projects, and urban growth and development. Construction and operation of projects related to these development trends could disturb or impact ABB or its habitat in the Plan Area. It is important to note that project proponents for these actions are responsible under the ESA to avoid take of ABB. If, during a project's planning process, the project proponent determines incidental take would occur, the project proponent would need to initiate the section 7 consultation process (for projects with a Federal nexus) or section 10 process (for projects with no Federal nexus) to comply with the ESA.

4.3.1 Oil and Gas

Oil and gas activities similar to those described above for the ICP in Oklahoma could occur in the Plan Area in Arkansas and Texas. Activities could include exploration, development, extraction, and transport and/or distribution of crude oil, natural gas, and other petroleum products.

4.3.2 Transportation Projects

Major highway projects throughout the Plan Area include construction of new highways and upgrades to existing highways. Additionally, there are four U.S. Congress-designated National High Priority (NHP) Corridors located within the Plan Area, including the Interstate Route 35 Corridor, North-South Corridor (I-49), Interstate 20-635-30-40 Corridor, and Highway 412 East-West Corridor (Federal Highway Administration 2017a). Of these four corridors, the North-South Corridor (I-49) has also been designated by the U.S. Congress an NHP Priority Corridor as a Future Interstate (Federal Highway Administration 2017b).

4.3.3 Urban Growth and Development

As shown in Table 3.10-1, *Population in the Study Area (2015-2050)*, the counties in each state of the Plan Area are projected to grow in population between 2015 and 2050. The overall projected growth rate across the Plan Area over this period is 20.55 percent, with the greatest growth rate in Oklahoma (22.55 percent), followed by Texas (10.49 percent) and Arkansas (5.92 percent). This population growth would likely lead to development activities to support this growth, such as residential, industrial, energy, and municipal development.

4.4 Evaluation of Cumulative Effects

For evaluation purposes, the resources considered in the impacts assessment have been placed into the following four groups:

- Biological Resources – vegetation, general wildlife, covered species, and special-status species

- Physical Resources – soils, water resources, air quality, and climate change
- Social Resources – land use, socioeconomics and environmental justice, visual, public health and safety (including noise), and traffic and transportation
- Cultural and Historic Resources

The impact types and mechanisms for all resources from the identified cumulative activities will be similar to those occurring from the Covered Activities, as described in Chapter 3, *Affected Environment and Environmental Consequences*. In addition, the Covered Activities' impact types and mechanisms will not differ between alternatives because AEP would continue to construct electrical facilities and maintain existing facilities in the Plan Area to provide vital services to its customers (see Section 3.1, *Introduction*). The main difference between Alternative B (Proposed HCP) and Alternatives A (No Action) and C (HCP with Reduced Permit Term and Plan Area) is that impacts would be generally less under Alternatives A and C because of the inefficiencies of project-by project ESA authorization (Alternative A) and smaller plan area and permit term (Alternative C). As such, there would be a commensurate reduction in cumulative impacts under Alternatives A and C.

4.4.1 Biological Resources

4.4.1.1 Vegetation

Past and present actions have resulted in changes to vegetation types in the Plan Area. Major developments have included conversion of native vegetation to agricultural crops or grazing land, urban or rural development, transportation projects, rights-of-way clearing for utilities, and development of industrial facilities, such as oil and gas pipelines, well pads, and associated facilities. As a result, native vegetation communities have been altered through temporary and permanent removal and permanent conversion. Degradation of natural vegetation types has also resulted from fragmentation of remaining native vegetation. Some of these changes, though not permanent, extend over the long term until required site restoration occurs. These impacts are localized and some can be controlled through avoidance, minimization, and mitigation measures. Past and present activities have also cumulatively resulted in the introduction and spread of invasive plants.

The reasonably foreseeable future actions could result in the removal and conversion of native vegetation types in project sites, rights-of-way, and adjacent areas. These actions could result in continued cumulative loss and degradation of native vegetation types within the Plan Area. Permanent conversion would occur in areas of facility footprints (e.g., structures, buildings, roads, etc.). The spread of invasive plants could continue during implementation of these reasonably foreseeable future actions.

When combined with other past, present, and reasonably foreseeable future actions, the action alternatives would contribute to temporary and permanent effects on vegetation in the Plan Area from operations and maintenance of existing facilities and construction of new lines and facilities (see Table 3.2-5 for a quantitative estimate of Alternative A's direct contribution). The contribution of the action alternatives to cumulative adverse impacts on vegetation would depend in part on the prior land disturbance. Effects would be lower in cropland or previously disturbed or fragmented habitat than in undisturbed habitats of high quality. Soil and vegetation disturbance associated with the action alternatives would potentially contribute to cumulative spread of invasive plants. The contribution from the action alternatives would be minimized by mitigation measures, such as re-vegetation measures (refer to Section 3.2.3.1, *Vegetation*).

4.4.1.2 General Fish and Wildlife

Past and present actions have resulted in cumulative changes to wildlife and habitats within the Plan Area. Past and present actions have likely affected all species populations to some extent. Conversion of native habitats to cropland and construction and operation of oil and gas pipelines and associated facilities and infrastructure have altered natural communities, resulting in changes in wildlife habitats, species abundance, and community composition. Adverse impacts associated with these past and present actions include direct injury or mortality to wildlife; habitat loss or fragmentation; permanent and temporary displacement of wildlife or interference with feeding, mating, nesting, or migratory behaviors; and habitat alteration or degradation associated with the introduction of invasive plants or replacement of native vegetation with cropland. Although changes to wildlife communities and habitats have occurred, the Plan Area still contains large tracts of intact (unfragmented) high-quality wildlife habitat which supports healthy populations and diverse wildlife communities.

The reasonably foreseeable future actions could result in additional cumulative impacts on wildlife within the Plan Area. Impacts associated with these actions could include additional injury or mortality to wildlife; habitat loss or fragmentation; permanent and temporary displacement of wildlife or interference with feeding, mating, nesting, or migratory behaviors; and habitat alteration or degradation associated with the introduction of invasive species.

When combined with other past, present, and reasonably foreseeable future actions, the action alternatives would contribute to temporary and permanent effects on wildlife habitat and individual wildlife. The mitigation measures identified in the HCP would minimize cumulative impacts to wildlife in the Plan Area.

Because the action alternatives are not expected to affect aquatic species, no cumulative impacts on aquatic species are expected.

4.4.1.3 Covered Species

The ABB is the only federally listed species for which take would be permitted under either action alternative. Past, present, and reasonably foreseeable future actions have resulted, and will result, in cumulative impacts on the ABB. The ABB is highly sensitive to disturbances and are slow to recover, making them more vulnerable to the effects of habitat fragmentation and alteration, disturbance, and individual mortality than other species. Past and present actions have resulted in cumulative, long-term adverse effects on the ABB within the Plan Area. The lack of urban development in the central portion of the Plan Area (eastern Oklahoma) has allowed the ABB to persist in this region (refer to the CPAs in Figure 3.2-3). Future development projects in the Plan Area, including oil and gas development, transportation projects, and urban expansion, may result in long-term effects on the ABB, depending on the project's specific location within the Plan Area and the amount of habitat loss or fragmentation associated with the construction. However, many potential adverse effects can be controlled through avoidance, minimization, and mitigation measures developed during the section 7 consultation process (for projects with a Federal nexus) or section 10 process (for projects with no Federal nexus).

When combined with other past, present, and reasonably foreseeable future actions, the action alternatives would contribute to adverse effects to the ABB within the Plan Area. The Service, through the ESA consultation process, ensures the cumulative amount of take of the ABB allocated to various permittees does not jeopardize the continued existence of the species.

4.4.1.4 Special-Status Species

Past, present, and reasonably foreseeable future actions have resulted, and will result, in cumulative impacts on special-status species within the Plan Area. Impacts on special-status species and their habitats are and would be generally the same as those described in Section 4.4.1.2, *General Fish and Wildlife*, but have affected or may affect individual special-status species differently, depending on the nature and location of individual actions. Effects of specific actions on special-status species may be less frequent or require a greater level of avoidance, minimization, or mitigation measures because special status-species receive greater protection under Federal and/or state law than other wildlife.

When combined with other past, present, and reasonably foreseeable future actions, the action alternatives could contribute to cumulative impacts on special-status species, but would not be anticipated to reach the level of take. For any AEP actions that would cause take on other federally listed species, AEP would be required to obtain coverage for those species under ESA section 7 (for activities with a federal nexus) or section 10 to ensure that their actions would not jeopardize the continued existence of the species. American Electric Power is currently working with the Service on a separate HCP to provide take authorization for listed and potentially listed bats throughout AEP's service territory, including the Plan Area for this HCP. The action alternatives are not expected to result in take of any non-covered federally listed species or eagles. For some species it is anticipated that the action alternatives would not contribute to any cumulative impacts, because there are no expected direct or indirect impacts from covered activities. These species include all the aquatic species listed in Table 3.2-3, as well as the gray bat, Ozark big-eared bat, golden eagle, rattlesnake-master borer moth, Earth fruit, and harperella.

4.4.2 Physical Resources

4.4.2.1 Soils

Past, present, and reasonably foreseeable future actions discussed in this cumulative impacts analysis could affect soils within the Plan Area. Site clearance, grading, excavation, and soil stockpiling associated with construction activities have affected soil resources in the Plan Area. Similar activities from foreseeable future actions may similarly affect soils. The impact mechanisms and types that would affect soil resources from the listed cumulative actions are similar to those occurring from the Covered Activities (see Section 3.5, *Soils*). However, cumulative impacts to soils are expected to be minimized through AMMs identified in the HCP, such as implementation of stormwater BMPs and revegetation of areas where Covered Activities temporarily or permanently change ABB habitat.

4.4.2.2 Water Resources

The past, present, and reasonably foreseeable future actions included in this cumulative impacts analysis could affect water resources. For example, ground clearing, placement of fill material, and maintenance of vegetation associated with construction and operations activities in ABB habitat near surface waters or within floodplains and seasonal wetlands that may be ABB habitat, have impacted these resources throughout the Plan Area. Similar activities from foreseeable future actions may similarly affect these resources. The impact mechanisms and types that would affect water resources from these cumulative actions are similar to those occurring from the Covered Activities (see Section 3.4, *Water Resources*). To the extent that the cumulative impacts occur within

ABB habitat in the same watershed as the Covered Activities, there could be a cumulative effect to surface waters on a watershed scale. However, cumulative impacts to water resources are expected to be minimized through compliance with state and Federal laws and regulations that protect surface waters (e.g., CWA Section 401, 402, 404; NFIP floodplain management regulations).

4.4.2.3 Air Quality and Climate Change

The past, present, and reasonably foreseeable future actions included in this cumulative impacts analysis could affect air quality and climate change. For example, construction-related activities such as site preparation require equipment that would generate criteria pollutants, volatile organic compounds (VOCs), Hazardous Air Pollutants (HAPs) from engine exhaust, greenhouse gases (GHGs), and fugitive dust from disturbed earth surfaces. Similar activities from foreseeable future actions may similarly affect these resources. The impact mechanisms and types to air quality and climate from these cumulative actions are similar to those occurring from the Covered Activities (see Section 3.3, *Climate and Air Quality*). However, cumulative impacts to air quality and climate are expected to be minimized through compliance with state and Federal laws and regulations that protect air quality (e.g., NAAQS and state ambient air quality standards).

4.4.3 Social Resources

4.4.3.1 Land Use

The past, present, and reasonably foreseeable future actions included in this cumulative impacts analysis could affect land use. For example, construction-related activities could affect land resources through change in land use from leases, easements, or land ownership; conflicts with land use compatibility where new ROWs are established as a result of construction; and temporary and long-term changes in the physical and natural environment that may affect recreational activities. Similar activities from foreseeable future actions may similarly affect these resources. The impact mechanisms and types that would affect land use from these cumulative actions are similar to those occurring from the Covered Activities (see Section 3.8, *Land Use*). However, cumulative impacts to land use are expected to be minimized through compliance with state and local land use plans and zoning laws and regulations that govern land use.

4.4.3.2 Socioeconomics and Environmental Justice

The past, present, and reasonably foreseeable future actions included in this cumulative impacts analysis could affect socioeconomics and environmental justice. For example, adverse effects from construction may occur at specific locations, including impacts to noise, visual resources, and land use, which may affect environmental justice communities. Similar activities from foreseeable future actions may affect these resources. The impact mechanisms and types that would affect socioeconomics and environmental justice from these cumulative actions are similar to those occurring from the Covered Activities (see Section 3.10, *Socioeconomics and Environmental Justice*). However, based on the standard criteria used to evaluate impacts to environmental justice communities in Section 3.10, *Socioeconomics and Environmental Justice*, cumulative impacts to socioeconomics and environmental justice are not expected to be disproportionately high and adverse.

4.4.3.3 Visual

Past, present, and reasonably foreseeable future actions in the viewsheds of potential Covered Activities could cumulatively increase the context and intensity of visual impacts on people and scenic quality of landscapes. Impacts would occur from project activities which lead to the degradation of public views and scenery affecting how the public engages or interacts with a visual resource. Cumulative impacts on visual resources would be similar in nature to those occurring from the Covered Activities (see Section 3.7, *Visual Resources*). The contribution of the action alternatives to cumulative adverse impacts on visual resources would depend on location; effects would be lower in areas more geographically separated or outside of the viewsheds, and greater in cases where high-intensity activities are situated in the foreground and immediate foreground in areas of high quality views or important scenic settings. Therefore, impacts from the action alternatives, when added to impacts from the identified trends, could result in cumulative impacts on visual resources.

4.4.3.4 Public Health and Safety (including Noise)

The past, present, and reasonably foreseeable future actions included in this cumulative impacts analysis could affect public health and safety, including noise. For example, operations of electrical infrastructure could affect public health and safety through the generation of stray voltage. Similar activities from foreseeable future actions may similarly affect these resources. The impact mechanisms and types to public health and safety, including noise, from these cumulative actions are similar to those occurring from the Covered Activities (see Section 3.11, *Public Health and Safety Including Noise*). However, cumulative impacts to public health and safety, including noise, are expected to be minimized through adherence to standard industry safety measures and compliance with applicable state and local regulations.

4.4.3.5 Traffic and Transportation

The past, present, and reasonably foreseeable future actions included in this cumulative impacts analysis could affect traffic and transportation. Operations and maintenance activities would require the use of vehicles and equipment within the ROW, causing the disruption of traffic and road closures. Similar activities from foreseeable future actions may similarly affect traffic and transportation. The impact mechanisms and types that would affect traffic and transportation from these cumulative actions are similar to those occurring from the Covered Activities (see Section 3.9, *Traffic and Transportation*). However, cumulative impacts to traffic and transportation are expected to be temporary in nature and often occurring on remote or rural roads with relatively low traffic volumes.

4.4.4 Cultural Resources

The past, present, and reasonably foreseeable future actions included in this cumulative impacts analysis could affect cultural resources. Cumulative impacts on cultural resources would be similar in nature to the direct and indirect impacts described in Section 3.6, *Cultural Resources*. These impacts would result from any undertaking that has the potential to physically or visually impact historic properties through disturbances, visual intrusions, and increased potential for unauthorized artifact collecting in ABB habitat throughout the Plan Area. Nevertheless, cumulative impacts to cultural resources are expected to be minimized through compliance with state and Federal laws

- 1 and regulations that protect cultural resources (e.g., NHPA, Archaeological Resources Protection Act,
- 2 Oklahoma Antiquities Law, Arkansas Code Act 58, and the Antiquities Code of Texas).